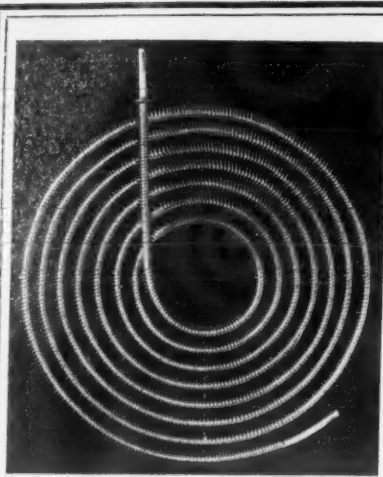


REFRIGERATION PARTS AND SUPPLIES

Manufacturers Who Specialize In Service
to the Electric Refrigeration Industry



Specify ROME-TURNEY CONDENSERS

Made of heavy gauge deoxidized seamless copper tube. One-piece construction. High efficiency. Designs for all requirements and conditions.

Rome-Turney Radiator Co.
ROME, N. Y.

AMERICAN EXPANSION
VALVES
AUTOMATIC-THERMOSTATIC
AMERICAN RADIATOR COMPANY

Metal Stampings Unit Bases and Guards

Household Refrigerator Metal Panels—Exterior or Inside Panels and Food Compartments.
Louvered Panels—Special Trays or Panels—Water Cooler Panels.

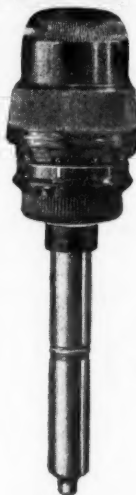
MOTORS METAL MFG. CO.
5936 MILFORD AVE. DETROIT, MICH.

Precision Built
VALVE Needles
VALVE Seats
VALVE Mechanisms

Four years of satisfactory
service to the industry

Buerk Tool Works
42 Pearl St. Buffalo, N. Y.

NEW ADJUSTABLE RANCO CONTROL



Provides an
Ideal Temperature
Range
on Household
Refrigerator

The Ranco Control
for 1930 has many
refinements and
basic improvements
which make it more
than ever the ideal
control for the modern
household refrigerator.

WRITE FOR
INFORMATION

The Automatic Reclosing
Circuit Breaker Co.
COLUMBUS, OHIO U. S. A.

Sulphur Dioxide
For Direct Charging
Every Container Analyzed
"Pure" Bone Dry
Cylinders 2 to 150 lbs.
Also Ton Drums-Tank Cars

ANSUL Chemical Co. MARINETTE, WIS.

CONDENSERS

THE BUSH MFG. CO.
HARTFORD, CONN.
W. H. MARK HANNA
6-247 GENERAL MOTORS BLDG., DETROIT, MICH.

The Purest Sulphur Dioxide
EXTRA DRY

Pure, easy to
handle, does not
deteriorate.

ESOTOO

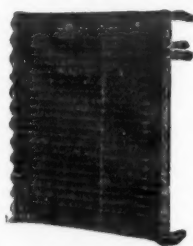
Trade Mark Reg. U. S. Patent Office

Made expressly for refrigerating use. Analysis guaranteed to show not over 50 parts of moisture per million.

Carried in stock by our Agents everywhere. Write or wire us where we can serve you.

VIRGINIA SMELTING CO. West Norfolk, Virginia
F. A. EUSTIS, Secretary 131 State St., Boston, and 75 West St., New York

FLINTLOCK CONDENSERS Full Capacity



With
Every
Unit

FIN AND TUBE SAME
SOLID PIECE OF
MATERIAL

FLINTLOCK
CORPORATION
4461 W. Jefferson Ave.
DETROIT, MICH.

CALCO Sulfur Dioxide

"Buy the best, by every test"

Cylinders - Drums - Tank Cars

THE
CALCO CHEMICAL CO., INC.

Bound Brook, N. J.

New York

Boston

Philadelphia

precision
built

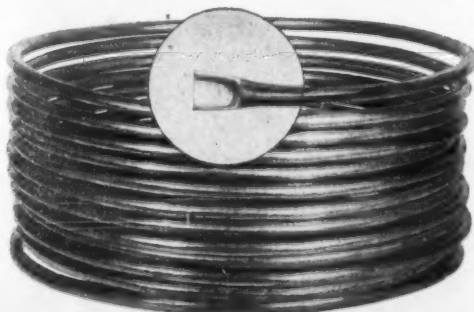
Specializing in
Refrigeration Compressor
Eccentric
and
Crank Shafts

Made to your specifications. Send us your blue prints—we'll send you our prices.

Modern Machine Works, Inc.
195 Milwaukee St., Dept. C. MILWAUKEE, WIS.

DEHYDRATED WOLVERINE SEAMLESS COPPER TUBING

Highest quality seamless copper tubing—perfectly dehydrated and solder-sealed—made to A. S. T. M. Specifications (B-68-30-T)—ready for quick installation. Send your production requirements for quotations, or wire for rush shipment from stock.



WOLVERINE TUBE CO.
SEAMLESS COPPER BRASS & ALUMINUM

1491 Central Ave. Detroit, Mich.

Phone Cedar 5000

Export Department—H. M. Robins Company,
120 Madison Avenue, Detroit, U. S. A.
Cable Address: Robins, Detroit

Sales offices in all major cities. Stock available at Los Angeles,
224 E. 11th St. Write or wire for name of nearest representative

DROP AND UPSET FORGINGS



Whatever your forging
problem, in the production
of mechanical refrigerators,
Defco has the men and machines to
deliver what you want, when
you want it.

The completeness of
our plant makes it good
business to consult our
engineers on any work you
may have or plan for the
future.

**DETROIT
FORGING
COMPANY**

DETROIT

MICHIGAN



NOW! In One Control Six Outstanding Features



Penn Type J, the new Unit Control for domestic electric refrigerators, offers manufacturers an unequalled opportunity. By combining the functions of several switches into one compact instrument, it reduces installation and service expense. In addition, it lends six attractive sales features found only on units equipped with Penn Type J:—

1. One Dial Control
2. Temperature Selector
3. Thermal Overload Protector
4. Start and Stop for Defrosting
5. Range and Differential Adjuster
6. Simplicity — Low Installation Cost

Write immediately for complete information and quantity prices. To reliable manufacturers, we will furnish a standard Penn Type J control for test purposes.

PENN ELECTRIC SWITCH CO.
DES MOINES, IOWA

New York
Boston
Philadelphia

With Offices in the Following Cities:
Cleveland
Cincinnati
Chicago
San Francisco
Los Angeles
Seattle
Lyons, France

London, England
Barcelona, Spain
Osaka, Japan

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

ISSUED EVERY TWO WEEKS
Vol. 5, No. 9, SERIAL NO. 111

Copyright, 1930, by
Business News Pub. Co.

DETROIT, MICHIGAN, DECEMBER 31, 1930

Entered as second class matter
Aug. 1, 1927, at Detroit, Mich.

FIFTEEN CENTS PER COPY
TWO DOLLARS PER YEAR

G. E. CIRCUS CONTEST ATTAINS ITS GOAL IN NATION WIDE DRIVE

Rex Cole Organization Leads in Quota Busting

Cleveland, Ohio.—The "On The Top Circus" sales contest conducted by General Electric refrigerator distributors and dealers has gone over the top.

In the face of general conditions, which admittedly are not of the best, the sales force conducted a ten weeks drive, starting on October 1st and ending December 9th, to sell \$20,000,000 worth of General Electric refrigerators. The contest was so successful that a number of distributors sold between 200 and 300 per cent of their quota.

The contest was set up along circus lines. For a week or two before the opening of the contest, various distributors took "circus troupes" to their dealer towns for the purpose of explaining the contest in detail to dealers and salesmen. In the contest every salesman was considered as a performer and he was urged to stage an outstanding sales performance. As an incentive to acts of star salesmanship, the salesman received one credit for every dollar's worth of business sold. These credits were good for prizes, ranging from clothing to furniture and automobiles.

In addition, the distributors were paired in a stunt which was labeled the "Circus Train" race. The winning distributor in this race which made the highest percentage of sales to quota won suitable recognition and the salesmen under them received a bonus of 5% in sales credits.

The leading distributor in point of sales to quota was Rex Cole, Inc., New York City, who in the face of a huge quota sold 256%. Other distributorships which staged outstanding sales were Florida Electric Refrigeration Company, St. Petersburg; W. A. Ramsay, Ltd., Hawaii; R. Cooper, Jr., Inc., Chicago; Cushman Refrigeration Company, Cleveland; Erco, Inc., Buffalo; George T. Bander, San Diego; P. H. Harrison & Co., Newark; Newton-Parsons Company, Hartford; Bard-Barger, Inc., Columbus; Judson C. Burns, Inc., Philadelphia; Milner Refrigeration Company, Cincinnati; Page-Morris, Inc., Albany; Eastern Hardware & Supply Company, Atlantic City; Electric Refrigerator Company of New England, Boston; Modern Home Utilities, Inc., Waterbury; The George Belsey Company, Los Angeles; National Electrical Supply Company, Washington, D. C.; The Hines Company, Baltimore; and the L. H. Bennett Company, San Francisco.

An interesting fact concerning the contest was that spectacular sales were not confined to any particular section of the country.

Interest of the salesmen was kept at a high mark throughout the contest by unique and unusual mailing pieces. These included an elephant hook, a miniature stake-driving mallet and various other items which had to do with circus atmosphere.

A weekly contest newspaper, known as "The Barker," was issued during the contest, reporting unusual sales and giving the standing of the various distributing organizations in the contest.

"The contest did much to spur salesmen on to unusual effort," said Walter J. Daily, sales promotion manager for the electric refrigeration department, (Concluded on Page 4, Column 5)

MANUFACTURERS PREPARE FOR NEW YORK MEETING

New York, N. Y.—A preliminary program has been announced for the 1931 midwinter meeting of the National Electrical Manufacturers' Association to be held here, Jan. 19-23.

Over thirty sessions are planned for Sections, Groups and Committees. At a special dinner meeting on Tuesday, January 20, there will be addresses by President Clarence L. Collins and a prominent speaker from outside the industry who will discuss current economic conditions.

A meeting of the Board of Governors is scheduled for January 20, the Standards Committee for January 22, and the Casualty and Fire Prevention Committee for January 23.

That portion of the industry devoted to electrical supplies will be particularly active in the meeting, though groups devoted to other products are also included in the program. All of the meetings will be held at the Association headquarters or the Hotel Commodore.

NO PINK

NO Buyer's Guide section appears in this issue—not because the ELECTRIC REFRIGERATION NEWS staff used up all its pink paper to wrap Christmas presents, but because the efforts of the entire force are being concentrated on the preparation of the annual Catalog and Directory number of the News, which is to appear January 14.

Most business enterprises experience difficulty in getting work done during the holiday season. This is particularly true in the publishing business, for printers, linotype operators, and compositors (to say nothing of editors) are great celebrators, and two legal holidays so close together play havoc with schedules. Hence the task of putting together an unusually difficult piece of publication work becomes doubly hard when attempted at this time of year.

The Big Issue

FOLLOWING its annual custom, this newspaper of the refrigeration industry will devote its first issue of the new year (January 14) to the presentation of a general picture of the industry, reviewing the past, and seeking to look into the future of the industry so far as that may be possible.

Known as the annual Catalog and Directory issue, this first issue of the year has proved of great service and it is much used for reference. The Catalog and Directory issue that is now in process of preparation will be more comprehensive than any of its predecessors. All of the directories which have been printed in previous pink sections will be included, with additional group listings. Statistics of great value will be published, and the leaders of the industry will talk of the future of refrigeration.

NO YELLOW

PREPARATIONS for a new year of even greater activity than the one which is ending have made it advisable to omit the Refrigerated Food section from this issue of the News. It will be published again, however, as an integral part of the January 14th issue to which more detailed reference is made in the column to the left. For the benefit of those readers whose chief interest is in the Refrigerated Food section, several articles relating to quick-freezing are included in this issue. An extremely busy year is promised in this new branch of the industry, and the Refrigerated Food section will keep in close touch with developments. It also will contain the usual material in regard to other refrigerated foods. The use of refrigeration in the preservation of foods is growing with remarkable rapidity.

LONG STRUGGLE ENDS AS CHICAGO ADOPTS REFRIGERATION CODE

City Council Passes Ordinance Favored by Boiler Department

Chicago, Ill.—A battle which began in July of 1929, roared furiously all through that summer, subsided temporarily only to be renewed early in 1930, was concluded here a fortnight ago when the Chicago City Council passed the refrigeration ordinance backed by the Boiler Inspection department. Twenty-six votes were needed for passage, and 26 votes were all that the measure received. The ordinance is published on pages 12, 13 and 14 of this issue of the News.

Those who supported the code backed by Health Commissioner Arnold H. Kegel and his department died hard. They had been defeated by a bare majority in the subcommittee of the Council's health committee, and had lost by one vote when the health committee itself weighed the merits of the two codes. Led by Aldermen Toman and Massen, the minority attempted to return the whole question to the health committee, but failed again by a single vote.

Alderman Terence F. Moran, chairman of the health committee, moved that the Council concur with the report of the health committee on an ordinance relative to the design, construction, installation, and inspection of refrigerating systems, and pass the ordinance.

Alderman Toman moved to recommit the report, but Alderman Moran countered with a motion to lay Alderman Toman's motion on the table. The "yeas" had it.

At this point in the proceedings Mayor William Hale Thompson announced that he must leave the meeting. Alderman J. B. Bowler thereupon moved that Alderman Oscar F. Nelson (Thompson's floor leader) act as temporary chairman of the meeting. The motion prevailed, and Alderman Nelson took the chair.

Unabashed by the defeat just administered to his side, Alderman Massen moved to substitute the minority report of the health committee (favoring the Kegel code) for the report of the committee. Again Alderman Moran moved to lay the previous motion on the table, and was upheld by the voting. There was then nothing left to do but vote on the ordinance recommended by the committee. Twenty-six "yeas" were recorded, and 14 "nays." Among the "yeas" was the vote of Alderman Nelson, the temporary chairman. Alderman Anderson raised a point of order to the effect that Alderman Nelson had no right to cast a vote on the pending question while in the chair, but the latter overruled the point of order. Upon the announcement of the vote Alderman Toman challenged Alderman Nelson's right to vote, and requested that his challenge be noted in the record, which request was granted.

The votes on the ordinance as recommended by the health committee were cast as follows:

Yeas — Jackson, Cronson, Govier, Rowan, Wilson, O'Toole, Moran, Coyle, Morris, Pacelli, Cepak, Sloan, Leahy, Maypole, Smith, Rozczynski, Kaindl, Nusser, Taylor, Landmesser, Ringa, Ross, Feigenbutz, Nelson, Hoellen, and Mellin.

Nays — Coughlin, Anderson, Eaton, Guernsey, Nance, Northrup, Toman, J. B. Bowler, Konkowski, Crowe, Albert, Loescher, Massen, and Williston.

Begun by Health Commissioner Kegel, who was roused to action by deaths alleged to have been caused by methyl chloride poisoning, the fight for control of refrigeration inspection soon settled down to an interdepartmental struggle between the Health and Boiler Inspection departments of the Chicago municipal government, and between the plumbers' and steamfitters' unions.

Also in the prominent foreground of (Concluded on Page 12, Column 3)

MAJESTIC REACHES PEAK OF 1200 UNITS PER DAY

Chicago, Ill.—The peak of Majestic electric refrigerator production was reached Friday, December 19, when 1,200 refrigerators were manufactured, crated and shipped, according to S. P. Hart, of the Majestic Household Utilities Corp.

Philadelphia, Los Angeles, Des Moines, Omaha and Detroit have been getting the biggest consignments of Majestic refrigerators, Mr. Hart states. More than 20 carloads were shipped to these and other cities last week.

Plenty of Visibility



DRUG STORE MEAT SALES SHOW SATISFACTORY GAIN

Pittsburgh, Pa. — Henry Bluestone, proprietor of the Spalding Drug Store here which is selling quick frozen meats, reports that he is still well pleased with his unusual venture. His regular customers seem to like the idea of buying meats with so little fuss and trouble, and the volume of repeat business is growing steadily. The novelty of buying meats in a drug store continues to appeal to the Pittsburgh public, and Mr. Bluestone is selling a considerable number of the Swift's identifiable cuts to strangers from various parts of the city.

For a while it looked as though the storm of opposition raised by some of the butchers in the East Liberty section, where the Spalding store is located, might result in difficulties, but the storm shows signs of dying out, and Mr. Bluestone anticipates no curtailment of his supply of meats.

The Kelvinator equipped Oreole display and storage case, from which the quick frozen meats are sold, has been doing its work splendidly.

As a result of the general interest in this new method of merchandising meats, the Kelvinator-Leonard Corporation has been receiving almost daily inquiries in regard to equipment for handling quick frozen products.

NELLOR MADE PRESIDENT

Louisville, Ky.—A number of changes have been made in the personnel of the Electric Refrigeration Co., distributors of General Electric refrigerators, now located at 118 South Eight Street. E. J. Nellor is now president and general manager. E. J. Theobald, vice president and A. C. Link, secretary and treasurer.

Mr. Nellor, who has been in charge of the company since last September, was formerly general manager of the Storz Electric Refrigeration Company of Omaha, Neb. Others appointed in this reorganization are George E. Lambert, wholesale manager, L. H. Miller, retail sales manager and H. C. Bates, commercial manager.

Melbourne, Australia.—One of the

largest refrigerated display counters in Australia is in the Myer Delicatessen here and includes 40 feet of triple glass case. The general arrangement is in island formation with square fronts faced with Monel metal and nickel trim. Refrigerating units of fin type coils in each section operated by 2 model "C" condensing units.

This installation was made by Warburton Frank Ltd., Frigidaire representatives.

MISSISSIPPIANS APPROVE OF FROZEN STRAWBERRIES

Jackson, Miss.—Frozen strawberries in the middle of December and for the Christmas dinner were offered for the first time here by the McNair Ice Cream Company, of 321 East Hamilton Street. The berries created quite a small sensation around Jackson, the largest city in Mississippi.

The berries, according to the McNair Company, were the first frozen food of any sort to be introduced to the people of Jackson and the reception was favorable. They were sold at a reasonable price of 40 cents for a pound package.

The first shipment of berries consisted of 240 pounds in one pound packages. Upon their receipt by the McNair company they were placed in the company's hardening room and later placed on sale. A number of hotels and cafes seized the opportunity to put fresh berries on their menus. Retail dealers also were supplied and it was found that these retailers gave splendid co-operation in every way possible through advertising, displaying and suggesting berries to customers. However, the company explained that most of the berries were sold from the retail department of the factory.

Two types of advertising was used here. Newspaper advertising to reach the housewives and attractive window streamers.

The McNair Company appeared optimistic over the future of quick-frozen foods in Jackson and vicinity. The volume of sales of berries during December more than repaid them for their expenses and showed a fair profit.

BIG CROWD A CERTAINTY AT COPELAND CONVENTION

Mt. Clemens, Mich.—With invitation acceptances coming in from all parts of the country, the 6th Annual Copeland Dealers and Distributors Sales Convention, to be held January 12-13 in Detroit, promises to be the biggest event of its kind in the history of the firm, according to W. D. McElhinney, vice-president in charge of sales.

Official company headquarters for the 1931 affair will be at the Detroit Statler hotel. The Convention meetings, however, will be held at the Players Club, 3321 Jefferson Avenue, one of the most completely equipped non-professional theatres in the country. The excellent stage facilities afforded by this unique playhouse will be fully utilized during the Convention for the "Copeland Show." Mr. McElhinney is scheduled to act as "Master of Ceremonies" and will introduce the new 1931 Copeland line in his own inimitable way.

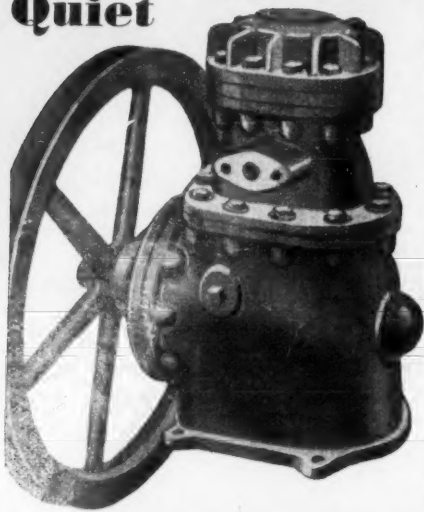
A notable group of speakers will deliver addresses at Convention sessions, including: W. R. Wilson, chairman of the board; Louis Ruthenburg, president and general manager; E. H. Brown, vice-president; C. W. Hadden, sales manager; R. M. Douglass, advertising manager; John Replogle, Edward Barger and E. Hughes, all factory officials.

COPELAND REPORTS PROFITS

Mount Clemens, Mich.—During the fiscal year, ending October 31, Copeland Products, Inc., earned a net profit of \$107,038.61, after all charges, including depreciation and federal taxes, according to a report just issued by William Robert Wilson, chairman of the board. This is equivalent to \$1.05 per share on its outstanding A stock.

All engineering and development expenses in connection with bringing out the 1931 line of Copeland refrigerators were charged off against current operations, as were the expenses incurred when the factory was moved from Detroit to Mount Clemens during the early part of the fiscal year. No charges were made to surplus account.

New, Improved, Quiet



PRECISION BUILT COMPRESSORS and COMPLETE CONDENSING UNITS

for Electric Refrigeration Manufacturers, Distributors and Dealers

Our plan allows the assembler to advertise and sell under his own name.
Sizes for 1/6, 1/4 and 1/3 H. P.
Sulphur dioxide and methyl chloride condensing units.
Ideal for ice cream cabinets, water coolers and small commercial installations.
Prices lowest in the history of electric refrigeration.
Full details given on request.

Deissler Machine Company Greenville, Pa.

Manufacturers of complete domestic and commercial refrigeration systems

Germans Inspect British Plant



Professor Plank Visits House of "Z" Process

London, England—The demonstration plant at Fleetwood, which is using the "Z" process for quick-freezing, has been very popular during the last three months among the fish and meat merchants of the north. Trawler owners, packers, men of science, practical workers from England, Holland, Norway, France, Germany, Japan, Argentine,

etc., have visited the demonstration plant and were much impressed. A special group, headed by the Dean of the Karlsruhe University, Professor R. P. Plank, investigated the whole process, paying special attention to color, appearance, flavor, crystal formation, etc. Color, appearance, flavor were that of the fresh product. It was also found that the ice

crystals formed were small (70 to 90 microns; Micron = 1/1,000 millimeters), and that the tissues were therefore undamaged and the product homogeneous.

Fish fillets frozen in cartons by the "Z" method have been sent per air mail to Messrs. Linde Co., Wiesbaden, Germany. This firm found the cod, hake and haddock fillets to be excellently frozen and the quality of the fish that of fresh fish. Samples of frozen fish also were distributed among 20 French firms and refrigeration specialists in France. They proved to be hard frozen, though they traveled per ordinary rail for 48 hours. Messrs. "Felix Potin," a French firm of good standing, also "Societe Morue Francaise," Professor Monvoisin and Mr. Moraux, editor of "Pêche Maritime," issued most favorable reports on the condition of these "Z" frozen fish.

Experiments in sharp-freezing in air were also carried out, the time being 15 to 20 times longer than when frozen by the "Z" system. Owing to the large crystal formation which is in direct proportion to the freezing times, the whole structure of the fish was damaged. The crystals in the fish after applying sharp-freezing were so large that they could actually be seen by the naked eye.

The fish frozen by the two methods, "Z" and sharp-freezing in air, were thawed. In the case of "Z" fish, there was no appreciable drip, whereas from the sharp frozen fish considerable drip was observed.

Various offals, kidneys, brains, sweetbreads, lamb, pork chops, steaks, etc., were frozen by the "Z" process. They were subjected to a special treatment, wrapped and packed before freezing, the freezing time being proportionate to the thickness of the various products, varying from 10 to 40 min.—the product without further handling being ready for retail distribution.

The "Z" process is applicable to standard package (1/4, 1/2 lbs., and more) as well as irregular packages.

It is possible to freeze fruit and berries in the same plant and the "Z" process can be applied on both ship and shore.

The "Z" process also has been successfully applied in the rapid-freezing of

ice cream. The handling of ice cream requiring in the present day hardening room an air temperature of 15° to 20° F., takes from 24 to 36 hours, whereas under the "Z" process a temperature of 6° F. is capable of carrying out the hardening process in 30 minutes.

A luncheon was served to the German group and was made up of the various dishes which were made from frozen products; some of the products were frozen by the "Z" method, others by the air system. The taste and appearance of the former were very much better than the latter, as observed by Professor Plank and his friends.

DANISH FIRM ABANDONS REFRIGERATION FIELD

Copenhagen, Denmark—The refrigeration department of Messrs. Richard Ellersens, Ltd., was discontinued on October 1 and the business and entire stock of refrigerating machinery, cabinets and accessories for ice cream plants have been taken over by A. S. Maskinkompagniet National.

The new company has no connection with Ellersens, Ltd., although the entire staff has been transferred to the A. S. Maskinkompagniet and will continue under the management of C. Morsbl, formerly of Richard Ellersens, Ltd.

ICELECT DOUBLES LAST YEAR'S BUSINESS

Omaha, Neb.—Icelect Corporation reports that 1930 business is now double that of the preceding year. More than 250 machines have been placed in foreign countries since July 1. A. E. Schneider, president, announces that his company is now seeking larger quarters.

BENNETT ON WORLD CRUISE

San Francisco, Calif.—L. H. Bennett, president of the L. H. Bennett Co., Ltd., northern California distributors of General Electric refrigerators, is on a trip around the world on the steamer President Polk.

MUELLER STREAMLINE VALVES AND FITTINGS

for Electric Refrigeration

SEALED CONNECTIONS

Without Nuts or Flares!

The new Mueller STREAMLINE Refrigerator Fitting is a permanently tight connection for Electric Refrigeration work—a fitting actually STRONGER THAN THE TUBING WHICH IT CONNECTS—yet much lighter, simpler, more quickly completed and more economical than any previous type of refrigerator fitting.

The end of the tube is slipped into the fitting, the proper distance being made positive by a shoulder inside the fitting against which the tube rests. Solder wire is fed in through a conveniently located opening in the fitting by applying heat from the blow torch.

The solder is thoroughly distributed around the joint by CAPILLARY ATTRACTION and is promptly visible around the entire end of the fitting, conclusively indicating that the joint is complete. It is refrigerant, seepage and vibration-proof. The STREAMLINE Fitting represents a remarkable saving of time and labor, as well as giving absolute assurance that every connection is both perfect and permanent. No flaring is necessary, and there is no waste "endage." The fitting itself is lighter, meaning a considerable saving in weight. Inside diameter of the fitting is the same as that of the tubing—there are no uneven surfaces or obstructions. MATERIAL AND INSTALLATION COSTS ARE CUT APPROXIMATELY IN HALF.

Mueller STREAMLINE Refrigerator Fittings, with the exception of the couplings, are FORGED. The coupling is made of extruded seamless copper tube. Forgings being made in dies under tremendous pressure, have a dense, close-grained structure that makes seepage through the fitting itself, impossible.

Mueller STREAMLINE Electric Refrigeration Valves and Fittings can be made to suit your special requirements.

MUELLER BRASS CO.

PORT HURON, MICH.

THREE GENERATIONS OF BRASS MAKING



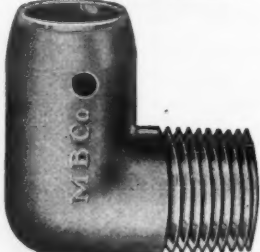
STREAMLINE Tee, copper to copper

Patent 1,770,852
Patent 1,776,502
Other Patents Pending



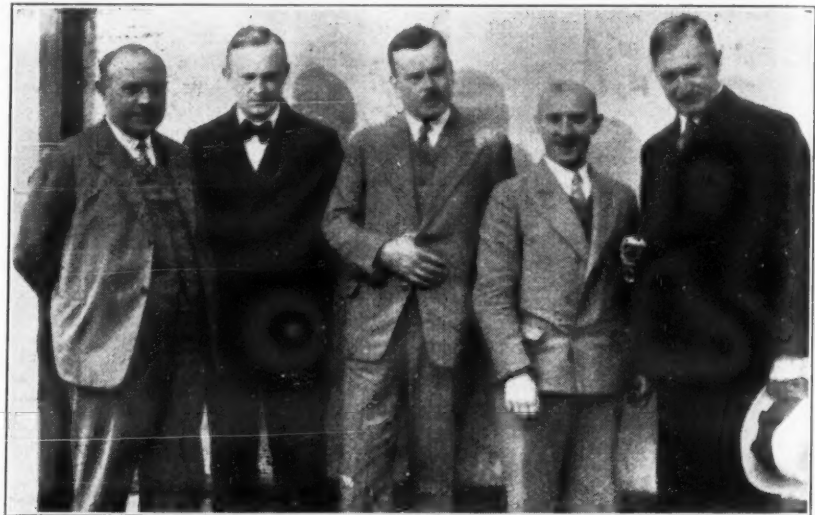
STREAMLINE Coupling, copper to copper

Patent 1,770,852
Patent 1,776,502
Other Patents Pending



STREAMLINE Elbow, copper to outside pipe thread

Patent 1,770,852
Patent 1,776,502
Other Patents Pending



Left to right—M. T. Zarotschneff; O. Wagner, Linde & Co., Wiesbaden; Prof. Plank, Rector, Karlsruhe University; W. Zarotschneff; M. Drescher, Atlas-Werke, Bremen.

BRISTOL'S

Small Size

"Handy Recording Thermometer"

AN ideal medium for obtaining automatic records of atmospheric temperature in cold storage rooms, refrigerators, hardening rooms, etc. Instrument as illustrated is entirely self-contained. The all-metal case of aluminum alloy is light in weight, yet rugged. Furnished either with black or white enamel finish. Has convenient handle for carrying about. Can be set down anywhere.

Charts used are but 4 inches in diameter, yet have wide, open scale graduations — easy to read, and very convenient to handle or file. Temperature records are continuous over period of 72 hours.

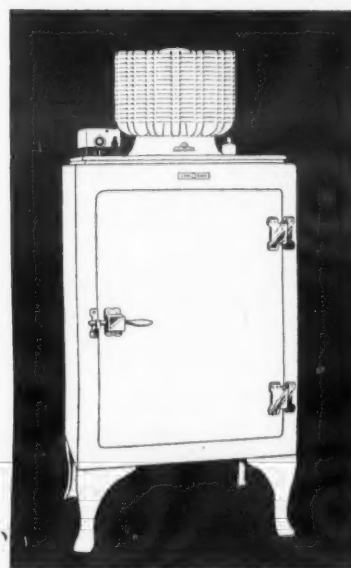
Complete information, prices, etc., in Bulletin No. 377. Write for a copy.

The Bristol Company, Waterbury, Conn.

JAN.

1st

THE FIRST DAY OF ANOTHER
BIG GENERAL ELECTRIC YEAR



Who said there was a business depression during 1930? In 1930 the sales of General Electric Refrigerators shattered all records!

In 1931—when business is *good*—isn't it reasonable to suppose that the sales volume of the Refrigerator that shattered all records when business was bad will be all the greater?

Happy New Year!

GENERAL  **ELECTRIC**
ALL-STEEL REFRIGERATOR

ELECTRIC WATER COOLERS

COMMERCIAL REFRIGERATORS

ELECTRIC MILK COOLERS

REFRIGERATION LEADER AT EASTERN DAIRY SHOW

West Chester, Pa.—Chester and Delaware County farmers, when they visited their annual combined county agricultural show here, the first week in December, discovered that the commercial part of the exposition was largely electrical, and refrigeration was one of the outstanding interests.

The largest showing of household machines was that of William H. Lamborn, who has been representing Frigidaire in Chester County for nine years. He has stores in Avondale and West Chester and covers Cecil County, Maryland, as well as the southern part of Chester County. He had three models on display, G 4, A. P. 5, and A. P. 72.

The Lamborn exhibit was in charge of George C. Palmer, who has just received notice for his second year that his work again entitles him to membership in the now famous B. T. U. Frigidaire Club. During the past two years Mr. Palmer has sold 300 of these household machines in the one county. He estimated roughly that 20 per cent of these were placed on farms. He finds his rural customers take a larger box

than the same size town or city family and that they can be sold just as easily if the same amount of time is given to them.

One of the new Majestics, model 170, 7-cubic-foot size, was displayed by J. B. Simon and Brother, who have been handling the Majestic radio in West Chester.

Westinghouse was represented by Thomas L. Taylor, Taylor Electrical Shop, of West Chester, although he did not have a refrigerator on display at the show. He featured electric washers and ironers and informed all people who stopped at the booth that the refrigerators were on display at his store.

One of the striking exhibits of the Philadelphia Electric Co. showed the comparison between the kitchen of 1900 and 1930. The outside window box in the early kitchen gave way to an electric refrigerator in the modern kitchen.

ENTERS REFRIGERATED TRANSPORT FIELD

Oakland, Calif.—Motor Vehicle Refrigeration, Ltd., has been organized, with headquarters in Oakland, Calif., to manufacture auto truck bodies equipped with electric refrigeration apparatus.

The Purest Sulphur Dioxide

EXTRA DRY

ESOTOO

Trade Mark Reg. U. S. Patent Office

Made by our exclusive patented process.

Pure, easy to handle, does not deteriorate.

Made expressly for refrigerating use. Analysis guaranteed to show not over 50 parts of moisture per million.

Carried in stock by our Agents everywhere.

Write or wire us where we can serve you.

VIRGINIA SMELTING CO.

West Norfolk, Virginia

F. A. EUSTIS, Secretary

131 State St., Boston, and 75 West St., New York

The Big Show Smashes Records



The Page-Morris Gang Finds a New Use for the Refrigerator

(Concluded from Page 1, Column 1)

General Electric Company. "It was unusual in its entire set-up and interest in it was maintained throughout. It was responsible to a great extent for a big increase in normal sales and for the fact that we increased our 1930 sales for 30 per cent over the previous year."

VISIBLE MERCHANDISING OF ICE CREAM PREDICTED

Milwaukee, Wis.—W. L. Molloy of the Grand Rapids Cabinet Co., Grand Rapids, Mich., was one of the speakers on the program at the sixteenth annual convention of the Wisconsin Association of Ice Cream Manufacturers, held December 16th and 17th, at the Hotel Schroeder in Milwaukee. Mr. Molloy discussed "Visible Merchandising of Ice Cream."

In his address Mr. Molloy pointed out that visibility and display are important factors in the sale of foodstuffs. He explained how other lines used these factors in the successful sale of their merchandise, and emphasized the fact that the ice cream manufacturer has in past years been selling his product without the aid of visibility or display. Ice cream is also being sold through new retail outlets, Mr. Molloy said, including the high-grade grocery store and food market.

Mr. Molloy described his company's new mechanically refrigerated, glass-topped, low temperature display and storage cases.

JAMES & CO. TAKE LARGER QUARTERS IN SPRINGFIELD

Springfield, Ill.—James & Co., distributors for the General Electric refrigerator, has moved from 403 South Fifth Street to 526 South Fifth Street, where it opened up an attractive showroom. Charles H. Love is general manager; T. L. Mauldin is connected with the company in the wholesale territory, and A. S. Haynes is in charge of the commercial installations.

Recently this company installed in the State House a model G-135 refrigerator equipped with a regular stock cabinet used for preserving test tubes for bacterial analysis. This is a thirteen and one-half cubic foot refrigerator and it is kept well filled at all times with test tubes used in the laboratory. Dr. H. J. Shaughnessy is in charge of the department.

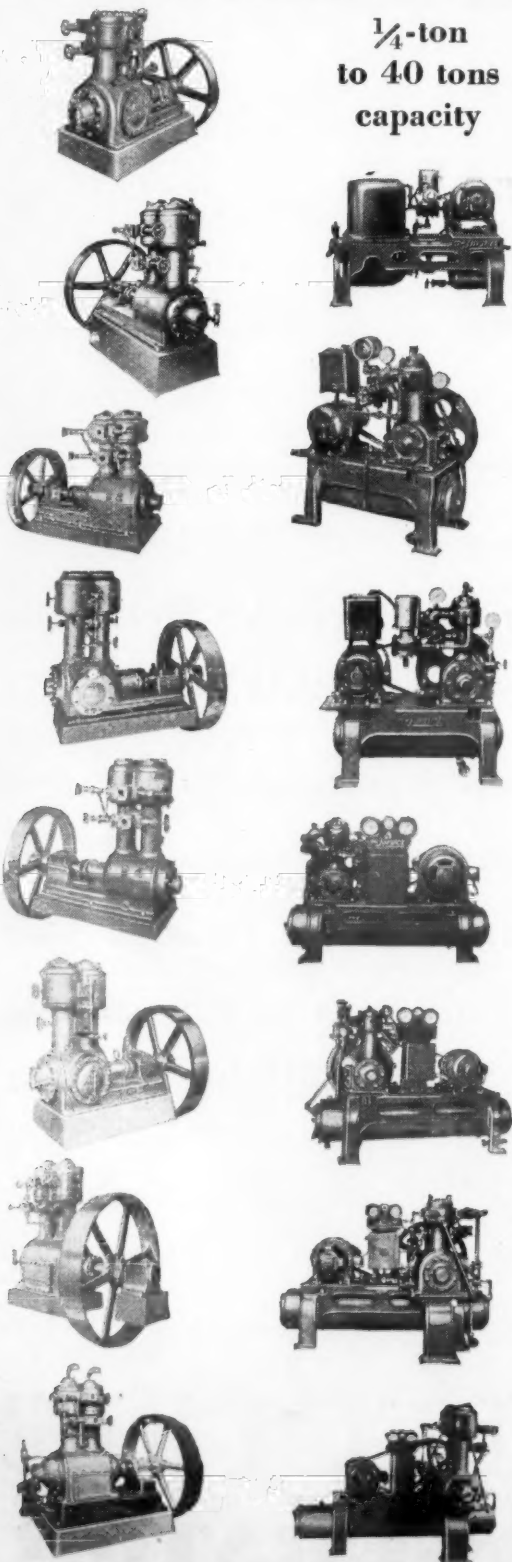
BOWEN GOES SOUTH FOR KELVINATOR

Detroit, Mich.—D. J. Bowen, a Kelvinator veteran, has been appointed sales representative of the Ice Cream Cabinet Division with headquarters at Atlanta, Ga., where he will co-operate with A. P. ("Pat") Hawkins, sales manager in the Southern District.

TO DIRECT ADVERTISING FOR NORGE CORP.

Detroit, Mich.—Howard E. Blood, president of the Norge Corporation, announces that Norge advertising will be directed by the Cramer-Krasselt Co., of Milwaukee.

Juruick offers a broader 1931 line... automatic units, compressors, fittings, accessories, low sides...



JURUICK, closing the best year in its history, anticipates even better business in 1931. Machines perfected to the last detail, a more complete line, with increased advertising and merchandising co-operation, make the Juruick franchise a most valuable asset to any qualified dealer. Juruick machines are good looking, compact, rugged, well designed, well built. They almost sell themselves. Juruick performance makes satisfied customers; insures freedom from service troubles; builds a reputation that sells more machines.

Juruick design provides these advantages

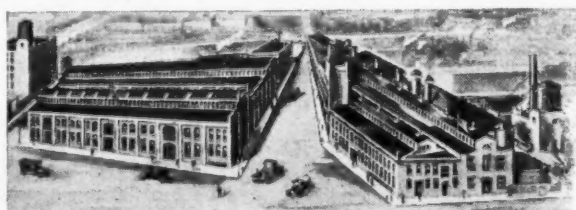
Juruick machines are built to give years of unflinching, economical refrigeration service with a minimum of attention. Heavy crankshafts with large bearings reduce vibration and insure a smooth-running, long-lived machine. All parts are machined in jigs and fixtures and are interchangeable. Cylinders are given a honed finish and pistons are accurately ground. Close tolerances produce high efficiency and prevent oil pumping. Correctly designed suction and discharge

valves make the Juruick extremely quiet. All working parts are easily accessible. Every machine is given an operating test under actual working conditions before shipment. Manufactured by the builders of the Taylor Stoker, Lo-Hed Electric Hoist and A-E-CO Marine Auxiliaries, the Juruick is the product of a company with adequate facilities, ample resources and more than seventy years of experience in the design, manufacturing and marketing of high grade machinery.

For more profits get business with Juruick

Refrigeration is America's fastest growing industry. Modern methods in food merchandising demand refrigeration as never before. And now come frozen foods to create new low-temperature requirements. To the wide-awake, responsible dealer in territories where we are not now represented, Juruick offers a quality line of equipment with which to capture the cream of this business. To the dealer who is now handling household machines, it offers the opportunity to extend his activities into the profitable field of commercial refrigeration. Juruick machines and our new Hydro-Thermal Grids, advertised elsewhere in this issue, offer an unbeatable, trade-building, profit-making combination.

Write for complete information



AMERICAN ENGINEERING

AMERICAN ENGINEERING COMPANY, 2420 ARAMINGO AVENUE, PHILADELPHIA





**"This refrigerator is insulated with
Dry-Zero...the most efficient
commercial insulant known!"**

Out on the firing line, where *quick, positive,*
impressions are essential, this conclusive state-
ment of quality is a *priceless* selling advantage.

DRY-ZERO CORPORATION, Merchandise Mart, Chicago, Ill.*

Canadian Office — 465 Parliament St., Toronto

DRY•ZERO

The most efficient commercial insulant known

SERVICE IS EMPHASIZED IN COMMITTEE'S REPORT

PROMPT, efficient service on gas refrigerators is suggested by the American Gas Association Subcommittee on Wholesale Sales as a means of winning goodwill of customers. The subcommittee, A. R. Rathemacher of the Consolidated Gas Company of New York, chairman, in its report on wholesale sales of gas refrigerators, stresses service and installation as two important items. Neatness of the completed installation is also one of the points which the committee places of prime importance to the servicemen. The following paragraphs pertaining to service were included in the report:

"In order to build up a large volume of business, the installations and service must be excellent, for although it is possible to sell a customer once, he must be satisfied with his purchase before he places another order. The builders usually erect one or more apartment dwellings periodically. If the old customers can be induced to place repeat orders and new customers can be ac-

quired each year, the sales are bound to increase rapidly. The service must be prompt and the service men must be efficient; in addition, much goodwill can be created and favorable comment obtained if the service men are courteous. A surly individual will leave an unpleasant impression, no matter how well the work is done, and yet he must not be too talkative, for this not only wastes time but also may cause complications.

"The installation may be a source of satisfaction or a reason for losing future business. The connections must be neat, straight and concealed wherever possible by being placed under the sink, behind the range, etc., or if in an exposed position, should be covered with metal moulding. The work must be quickly done, without need of returning to the shop or going to a nearby store for missing fittings. The quicker the installers are out of the kitchen, the more pleased the user of the refrigerator will be. If it is necessary that delivery and installation be made at a definite time, this must be done without fail.

"For the service and installation work, a special force should be obtained, for here again the specialist cannot fail to be more adept than men who have many other duties."

APARTMENT OWNERS LIKE ELECTRIC REFRIGERATION

New York, N. Y.—Statistics in the apartment house field point heavily in favor of electric refrigeration. An interesting survey was conducted by the Apartment Sales Division of the New York branch of Kelvinator Sales Corp., figures for which are elaborated on by John D. Cassidy, manager of that division, in the current issue of *The Superintendent*, official publication of the New York Building Superintendents' Association.

In all, 160 apartment buildings were surveyed—40 in each of the following Boroughs—Bronx, Manhattan, Brooklyn and Queens. In each instance, one-half of the buildings surveyed were equipped with automatic refrigeration, and the other half had not yet been equipped. In all cases, the buildings not equipped were in the same neighborhood, and of the same potential class as those buildings which were equipped.

A complete tabulation of the survey gives the following results:

	Using Kelvinator	Using Ice
Total number of buildings surveyed	80	80
Total number of suites in apartments surveyed ..	4300	3411
Total number of vacancies	336	329
Per cent vacancy	7.8	9.6
Per cent occupancy	92.2	90.4
Per cent occupancy in favor of Kelvinator equipped buildings	1.8	...
Average rental per suite, \$90.00		\$75.00
Increased rental per suite in favor of Kelvinator, \$15.00		...
Per cent increased rental per suite in favor of Kelvinator	20.0	...
Fifteen of the 80 buildings equipped		

with automatic refrigeration were 100 per cent rented, whereas only nine of the buildings not equipped were rented in their entirety.

Everyone of the 80 owners of automatic refrigeration were satisfied with his investment. Practically everyone admitted that it was a factor in securing better rentals and better occupancy.

Of the 80 apartment buildings which were not equipped, 57 owners contemplated installing automatic refrigeration in the very near future.

GALLOWAY SELLS 52 UNITS FOR TWO JOBS

Memphis, Tenn.—The W. P. Galloway Company reports the installation of 42 Frigidaire units in the new Alta Vista Apartments in this city.

A contract has just been closed by this company for the installation of Frigidaire equipment for J. L. White, who is constructing a modern ten-family apartment building.

The Galloway Company is wholesale distributor for Frigidaire. S. D. Knight is general manager and E. R. Moon is sales manager. The Galloway Company is preparing for a banner year in 1931 in the apartment house field.

NEBRASKA JUDGE ORDERS COOLERS FOR HIS COURT

Omaha, Neb.—It is not often a judge of the district court is called upon to decide whether cooled water shall be served in a public building. Presiding Judge Fitzgerald, of the district court of Douglas County, Nebraska, recently had to make a decision concerning this question.

Electric coolers had been in place until December 1, when in conformity with yearly practice they were removed and the water supply for the court house came direct from the street pipes of the water company, without any pre-cooling process. Members of the jury in Judge Fitzgerald's court objected and stated strongly they desired the electrically cooled water replaced for their use, at least.

Without asking the jury if it had concurred in a verdict, the Judge ordered the coolers placed back in service, with the further order that they be left in service so far as his court was concerned. The county commissioners hastened to obey the court order and now all is well.

Attention Sales Managers and Engineers

One of our associates has just completed a report on a six weeks' actual sales canvass, selling low temperature cases to the independent merchant in twelve cities within a close radius of Chicago.

The report covers the following matters:

1. The best prospect for equipment and how to find him.
2. The type low temperature equipment that will sell now.

If you are interested in the above write us—no obligations.

Associated Refrigeration Engineers—Engineering Bldg.
205 W. WACKER DRIVE, CHICAGO, ILL.

What should you know about Quick-Freeze Insulation?

For polar temperatures, the insulation must provide "extras." Cork offers these features

QUICK-FREEZE deals with extra low temperatures. Fifty degrees below zero is not uncommon commercially today. And fifty below needs extra protection—not only *more* insulation, but *better* insulation.

Armstrong's Corkboard offers certain "extras" which no other material possesses in the same degree. In addition to low heat conductivity, the following features, which have made cork the standard insulation for all refrigeration, fit it ideally for quick-freeze work:—

Cork is moisture-resisting. No matter how good your insulation may be when you install it, if dampness gets in it will not last. For moisture absorption is the arch enemy of insulation—causes it to lose efficiency and to disintegrate so that it soon has to be replaced.

Corkboard's structural strength stands up in heavy constructions necessary for quick-freezing. It will not warp or buckle. Cork resists fire—a factor to be considered with installations costing thousands of dollars. Finally, cork is economical. It lasts through years of hard service.

Armstrong's Frozen Foods Development Committee is continually working on problems of quick-freeze insulation. The knowledge and experience gained from hundreds of experiments are at your service. Write to the Frozen Foods Development Committee, Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster, Pennsylvania.

Armstrong's
A
Product

Armstrong's Corkboard Insulation

THE STANDARD INSULATION FOR ALL REFRIGERATION

Refrigerator Harmonizes With Design



Beaumont, Texas.—Electric refrigeration was selected for one of the finest apartment houses in the entire southwestern section of the United States when M. F. Yount, wealthy Beaumont, Texas, oil man came to the matter of equipping the kitchens of his luxurious new apartment building.

Eighteen furnished suits of from four to six rooms each, containing furniture and decorations especially made for the building, all have their kitchens

equipped with Frigidaire AP-7-1 models which harmonize with the design.

Mr. Yount also owns the Mildred Building, which adjoins the new apartments. This building, containing a modern Frigidaire-equipped drug store; a 100 per cent Frigidaire-equipped grocery and a barber shop which contains an ice maker and a water cooler.

The Beaumont office of Cox & Blackburn, Frigidaire distributors in Houston, made this installation.

precision built

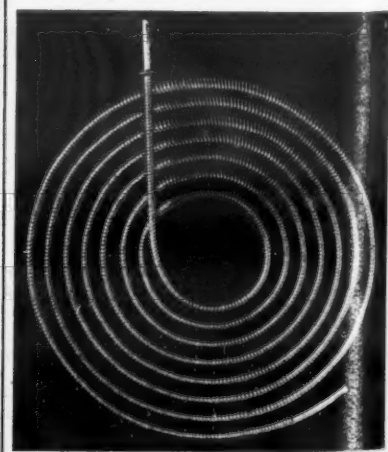
Specializing in
Refrigeration
Compressor
Eccentric
and
Crank
Shafts



Made to
your
specifica-
tions.

Send us
your
blueprints
—we'll send you
our prices.

MODERN MACHINE WORKS, INC.
195 MILWAUKEE ST., DEPT. C
MILWAUKEE, WIS.



Specify
ROME-TURNEY CONDENSERS

Made of heavy gauge deoxidized seamless copper tube. One-piece construction. High efficiency. Designs for all requirements and conditions.

Rome-Turney Radiator Co.

ROME, N. Y.

NO KELVINATOR HAS EVER WORN OUT

THE experience of thousands of owners, over a long period of years, has proved the dependability and economy of Kelvinator electric refrigeration equipment. Records fail to disclose any Kelvinator that has ever worn out, or been discarded because of its inability to do the job for which it was intended.

This life-long dependability is a valuable asset, a sales advantage that means bigger volume and bigger profits for Kelvinator merchants.

With the three great new Lines of Domestic refrigerators and the complete line of equipment for every Commercial refrigeration requirement, 1931 is going to be *another Kelvinator year!*

Let us send you the facts. Address your request to

KELVINATOR CORPORATION

14245 Plymouth Road, Detroit, Michigan
Kelvinator of Canada, Limited, London, Ontario
Kelvinator Limited, London, England

1914 • 1931

Kelvinator has its own finance company, Refrigeration Discount Corporation (ReDisCo) which is rendering to Kelvinator dealers a valuable service in the handling of installment paper—a specialized service developed around the particular needs of the electric refrigeration industry.

Electric Refrigeration for Homes, Offices, Stores, Factories, Etc.

ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

Published Every Two Weeks by

BUSINESS NEWS PUBLISHING CO.

550 Maccaebes Building, Woodward Avenue and Putnam Street
Detroit, Michigan. Telephones: Columbia 4242-4243-4244

Subscription Rates:

United States and Possessions: \$2.00 per year; three years for \$5.00

(Refrigerated Food Section only, \$1.00 per year)

All Other Countries: \$2.25 per year; two years for \$4.00

Advertising Rates on Request

F. M. COCKRELL, Publisher

WILLIAM JABINE, Editor

FREDERICK W. BRACK, Advertising Mgr.

JOHN DRITTLER, Managing Editor

GEORGE N. CONGDON, Business Manager

GEORGE F. TAUBENECK, Assistant Editor

Eastern Manager: H. A. DeLashmuth, 1950 Graybar Bldg., New York, N. Y.
Phone Lexington 9113

Copyright 1930 by Business News Publishing Co.

Vol. 5, No. 9, Serial No. 111

December 31, 1930

Selling Health

SOME speaker at nearly every business convention in the last couple of years has been sure to base his plea for harder work and united action on the fact that our business structure has changed, that the average company is not competing with its rivals within the industry, but that the industry as a whole is competing with other industries. The consumer's dollar is the prize that each year is parceled out among the competing industries.

Admitting that fact to be true, doesn't it give the refrigeration industry an immeasurable advantage? For the refrigeration industry doesn't depend for its welfare on the sale of refrigerators. They are only the means toward an end. What the refrigeration industry has for sale to the public is a far more precious product than the cooling machines which are its nominal stock in trade.

When a man buys a modern refrigerator for his home he buys health for his family. He takes out a new insurance policy for their benefit, not a policy that matures only when he dies or a long term of years has elapsed, but a policy that makes its benefits evident from the moment his refrigerator is installed and set in operation.

Properly refrigerated food tastes better than food kept without refrigeration. All kinds of delicious frozen desserts can be made with the aid of the modern electric refrigerator. Ice cubes are more convenient than chipping ice with an ice pick. The cost of electric refrigeration is remarkably low. There are a host of other reasons why electric refrigerators are desirable, but they all count for little beside that great fact—that proper refrigeration means better health.

The refrigerator salesman who sells health first, and his particular type of refrigerator second, will be the man who gets the biggest share of the consumer's dollar. The many salesmen for other industries with whom he competes can't match his sales talk if he talks health. On the other points they can do as well, and in some cases better than he can, but when it comes to talking health, most of them have to go easy.

And in the long run, there is no more satisfactory thing to sell than health. Each sale means tangible profit to both buyer and seller. No man can argue that he and his family have more health than they need or can use. There is no overproduction of that particular commodity. The refrigerator that does its work well—and most of them do—makes the world a better place to live in.

Selling health should be the paramount activity of the refrigeration industry, not only in the year that is just beginning, but in all the years that are to come.

Looking Ahead

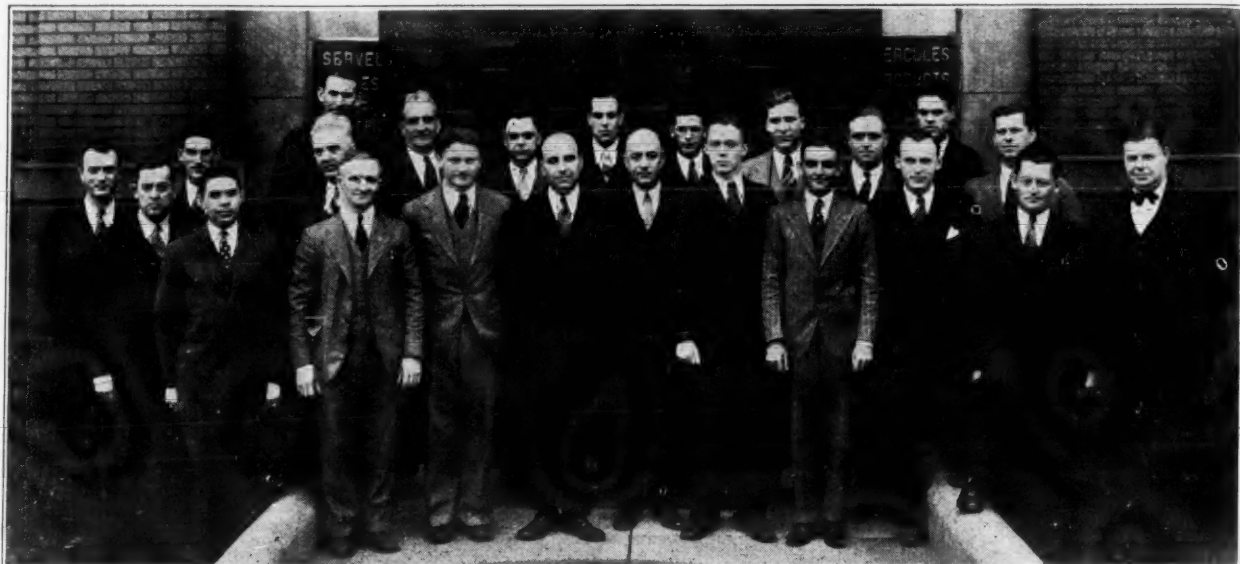
ORDINARILY a business newspaper appearing on the last day of the year would devote most of its space to reviews of the year just ending, and forecasts of the year that is just ahead. ELECTRIC REFRIGERATION NEWS is not doing that, not because there is anything wrong with the practice, but because its next issue (January 14th) has been selected as the annual Catalog and Directory issue, and will contain much valuable data that is not immediately available in the midst of the holiday season.

Plans for the forthcoming issue include the publication of refrigeration statistics that have never before been made public, and glimpses into the future written by the leaders of the industry who this year have been asked to talk about the future on a five year basis instead of confining their statements to 1931. All progressive businesses are looking further ahead than ever before, and a picture of the refrigeration industry during the 1931-1935 period as its leaders now see it, should be of great value.

Of course such a picture will not be as precise and exact as a forecast of the possibilities of 1931 would be—and the statements in the next issue should be read with that fact in mind—but on the other hand, it should show the aims and purposes of the industry and the roads it is likely to follow in the next five years. The broader thinking of the industry will be in evidence.

In addition, the January 14th issue will carry other material of a general nature which will help to make it a valuable aid to the refrigeration man. True to its name, it will also print the immediate news of the industry. What that will be it is impossible to say at this moment, because news isn't news until it happens.

Schooled For Service



Evansville, Ind.—Ending two weeks of practical instruction and training, twenty-three students completed an intensive two weeks' factory school on the Electrolux gas refrigerator which was held December first to thirteenth, inclusive.

In accordance with the policy of Electrolux Refrigerator Sales, Inc., periodic training of field representatives, six district managers and one service representative also returned during the school for post-graduate work. These men were given special training and several evening classes were held covering the salient points of sales and advertising plans for 1931. They returned to their homes all set for a big year.

Front row, left to right: R. R. Harmon, Evansville; A. Walters, Peoples Gas Light & Coke Co., Chicago; Leo Le Bois, Evansville; H. E. Price, Laclede Gas Light Co., St. Louis; R. P. Haskin, district manager, Dallas; J. H. Hyde, Evansville; H. L. St. John, Fort Worth Gas Company, Fort Worth; H. H. Roth, service representative, Atlanta; J. E. McColloch, T. J. Neal, Inc., Jackson, Miss.; R. B. Moore, factory school.

Second row: E. Knapke, Evansville; T. Neal, T. J. Neal, Inc., Jackson, Miss.; A. Wolfe, Evansville; H. M. Molyneux, district manager, Kansas City, Kans.; J. W. Baird, district manager, Greensboro, N. C.; F. P. Shea, district manager, Chicago; A. Mehlinger, Evansville; S. A. Mantague, Evansville; J. P. Smith, Peoples Gas Light & Coke Co., Chicago; F. H. Mercer, Evansville; E. A. Dunham, district manager, Bloomfield, N. J.; W. S. Smith, Evansville; MacLean Hoggson, district manager, Cambridge, Mass.

The Expansion Valve

By GEORGE F. TAUBENECK

His name is Heber. His measurements correspond to the last reported figures on Jess Willard, he likes oatmeal for breakfast, and his favorite sports are swimming and playing on the floor of his cottage with his baby daughter.

The small middle Western town in which Heber lives has three dry goods stores, seven grocery stores, four barber shops, nine restaurants, fourteen filling stations, seven churches, and two representatives each of the following businesses: banks, hotels, drug stores, hardware stores, clothing stores and furniture emporiums. There is just one man in the electrical business, however, and Heber is that man.

Perhaps this picture of a prairie village dealer in electric refrigeration isn't altogether typical, yet any member of the tribe is worth watching for a time, and Heber's story is as revealing as a windy day (reminds us of the minister who preached on "Women's Fashions" and took his text from the Book of Revelations).

For six years he has been selling electric refrigerators. During that time he has had a spasmodic succession of competitors, who have tried more than half a dozen different makes of machines. None have succeeded in making any headway against Heber's brand of salesmanship.

Why has he a strangle-hold on all that town's refrigeration business? Because he knows how to put refrigerators in and how to cure their ills. His competitors have been dry goods or furniture merchants who knew little more about the refrigerators they sold than their customers, and who backed out immediately upon discovering that there was more to the machine than a plug and an extension cord.

Heber knows as well as his easily-frightened rivals that there are "outs" to the business of merchandising electric refrigerators, but that doesn't deter him from continually pushing their sale. It pays, he says.

He gets 20 per cent commission on every refrigerator he sells. Out of this amount he must pay the freight on the machine from the factory to the distributor, and from the distributor to his shop. He must deliver it, install it, and service it free for one year. And still he makes a profit.

Overhead? Not enough to bring gray hairs to his head. He has a small shop. His wife takes care of it while he goes out to sell. He is not only the salesman, the installer, and the service man, but the boss, bookkeeper, and stenographer as well.

Inasmuch as he knows personally almost everybody within 50 miles (he has spent all his life there), he does not think it necessary to advertise.

One year only did his refrigeration business end up in the red, and that was 1928, when his biggest sales vol-

ume was registered! During that year he sold 40 refrigerators, but service costs ate up his profits.

Oddly enough, all of the flaws in this lot of machines seemed to have appeared during that first year of free service, for he says he has had scarcely a call from any of the owners since the year ended.

The time to sell refrigerators, he finds, is the period between February 15 and July 1 every year. He concentrates nearly all of his sales efforts during that time.

Related products are present in abundance in his shop. Fans, lamps, washing machines, irons, vacuum cleaners, heaters, flashlights, radios.

He's a bug on radio. For almost a dozen years he has been experimenting with amateur broadcasting and receiving sets, and has made dozens of both.

After trying a number of different makes, he has now settled down to the merchandising of one medium-priced brand of radio. Between September and Christmas he sells a good many radios in that small town, and has become particularly successful at replacing older types with the latest models.

When one asks him about The Depression, he laughs grimly.

"Depression? Huh. We've been in one down here in the corn belt for four years. Times aren't any worse now than they were in 1926, but that doesn't mean that there's a lot of money floating around here just now. There isn't."

"If you want to find out how much money the farmer has, go out and try to sell him a farm-lighting plant. Try to sell him anything. He'll offer to trade you a few acres of wheat, or perhaps some corn—if he lives on the river-bottom and escaped the drought. But he hasn't any money. Hasn't had any for years."

Whenever I begin to get long-faced over my business, I go out and make a call on a farmer. I may not sell him anything, but I feel a lot better when I get back."

Try these on your prospects: Lightning struck an outside wire on a home in St. Petersburg, Florida, completely destroying the refrigerator cable. Upon being given a new connection the following day, the G. E. refrigerator in this home operated perfectly. It had automatically shut off when the lightning struck. . . The Copeland Refrigeration Co. of Chicago has a Day and Knight on its staff. Mr. Day is the office manager, while M. W. Knight, formerly with the Detroit Copeland factory branch, is the new dealer representative of the organization. . . The ice men in El Paso, Texas, have recently concluded a price war which began in March, by agreeing to raise prices 100 per cent. Let's hope this cut-throat competition idea never meets with the approval of the barbers.

SWOPE HAS CONFIDENCE IN ELECTRICAL INDUSTRY

Schenectady, N. Y.—Bright prospects for the electrical manufacturing industry, of which electric refrigeration is a prominent factor, are forecast by Gerard Swope, president of the General Electric Co., in his annual statement, which reads as follows:

"It is always difficult to look ahead, and particularly so this year.

"We, in the electrical industry, possibly have had more to be thankful for during the past year than those in many other lines of endeavor and this may also be true of what the future holds for us. New methods in industry, with electricity as their base, are being continually introduced; new uses are constantly being found for electrical apparatus and appliances in the home and new devices are being developed to meet these needs. The statistics of the electric light and power companies throughout the United States for 1930 reflect these tendencies, showing that there has been but a slight decline in the use of electric power by commercial organizations and in industry, and that the electric energy used in the homes, even in this year of depression, has increased over last year.

"We expect this course to continue, and therefore look forward with confidence, believing that the electrical manufacturing business, as a whole, in the new year should surely be no worse and possibly somewhat better than in 1930."

BIRDSEYE FOODS POPULAR FOR HOUSE PARTIES

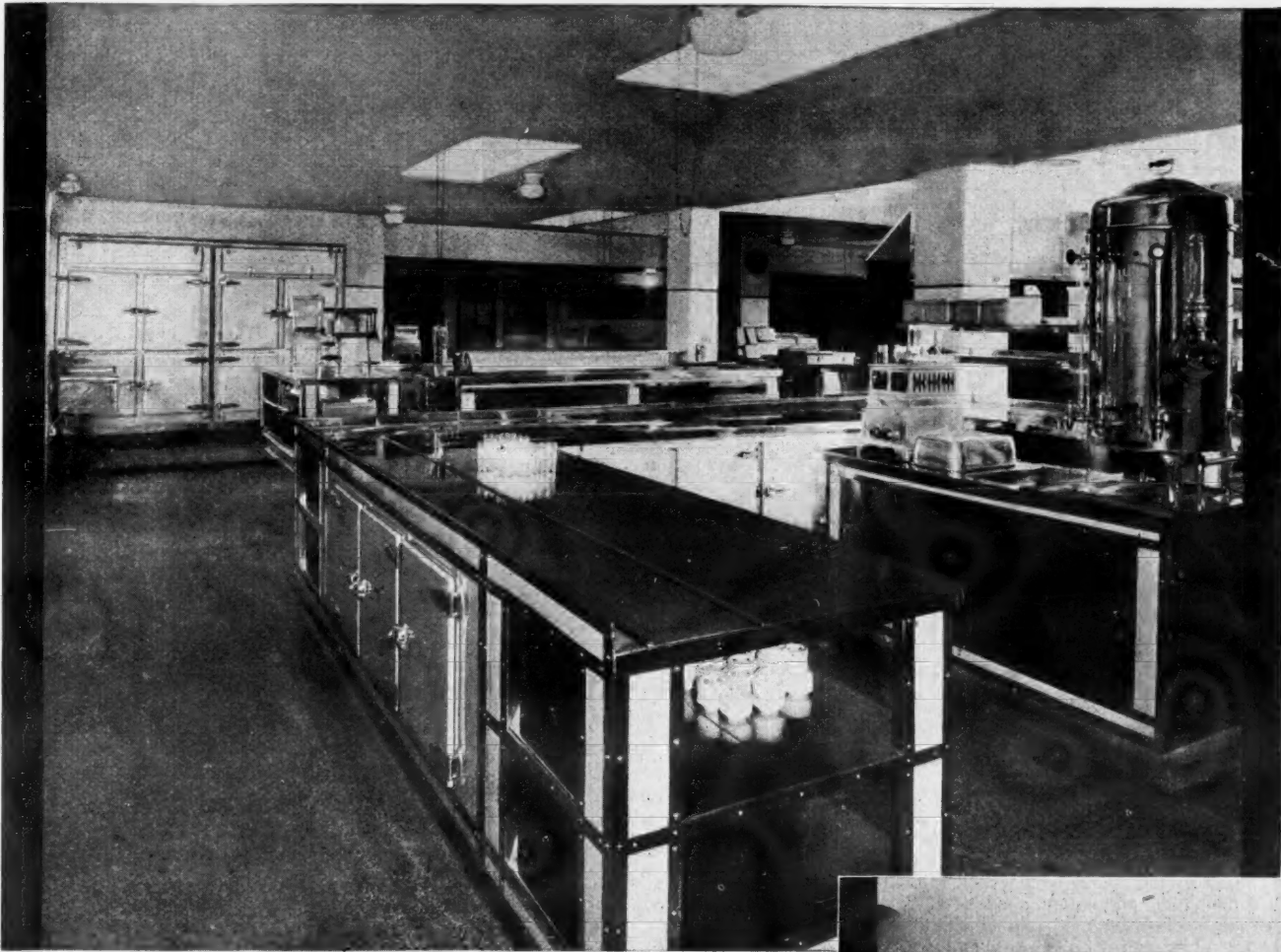
Springfield, Mass.—Sales of Birdseye Frosted Foods are making a good showing in the Christmas season, the line being increasingly popular for house parties as well as family dinners. Week-end specials included boneless pot roasts at 37 cents a pound and rib roasts of beef at 39 cents, under the blue label, and sirloin roasts at 49 cents and stewing beef at 24 cents a pound under the orange label. These figures, together with the elimination of waste matter under the packaging system, appeal to many consumers on economy grounds as well as on the score of convenience.

Sales of the line are being continued here in all the stores that have handled the goods, with the exception of two stores of the James Van Dyk system, where the cases have been removed. In Holyoke the line is now on sale close to the City Hall, in the main retail district. R. H. Markert has moved his First Quality Food Shop from 1644 Northampton St. to 550 Dwight St. and has discontinued the sale of all meats except the Birdseye products. The new location near a busy corner makes the line available to purchasers from a wide area in and around the city.

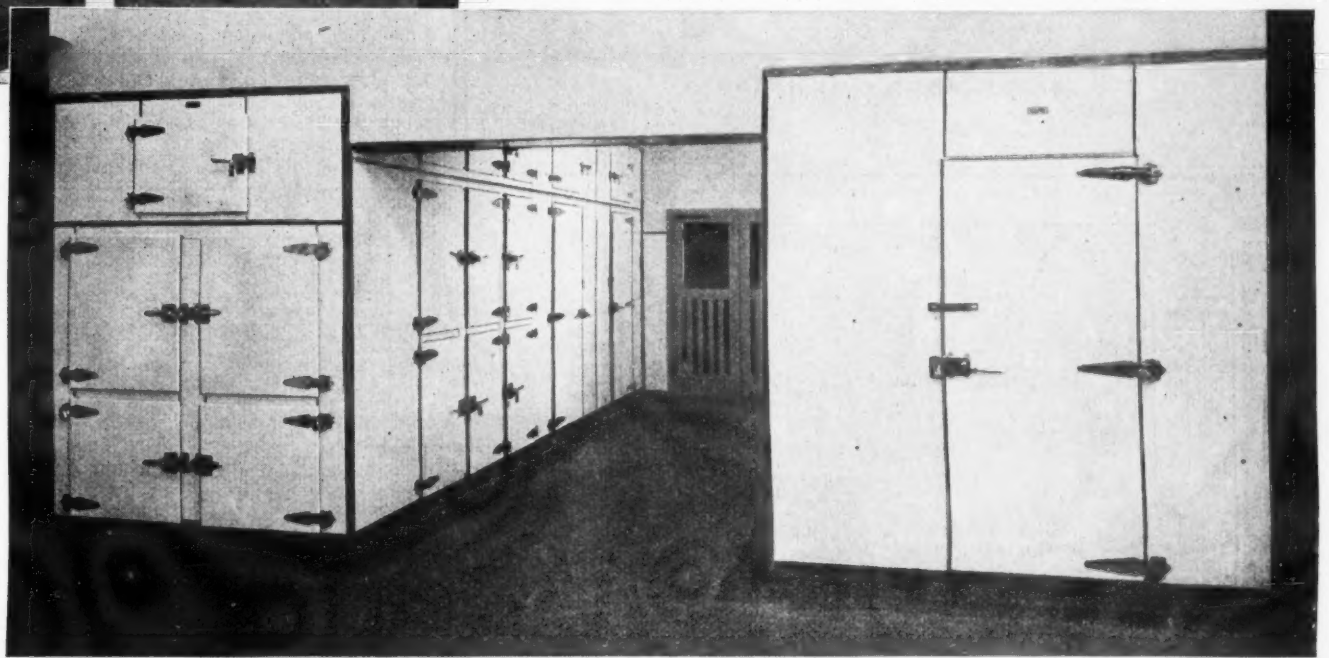
MAJESTIC FORMS COMPANY IN LONDON

Chicago, Ill.—The Grigsby-Grunow Co. and its affiliate, the Majestic Household Utilities Corp., have recently organized the Majestic Electric Co., Ltd., of London, England.

This company will establish and operate a factory branch and distributing plant for Majestic radios and electric refrigerators in England, and plans to conduct similar operations on the European continent.



WHERE QUALITY REALLY COUNTS



CABINETS BY
Seeger
SAINT PAUL

Two interior views of the Cottage Hospital at Santa Barbara, California—showing Cabinets by Seeger—Frigidaire equipped.

Wherever quality is the paramount consideration, there you will find Cabinets by Seeger—

The "Made-to-Order" department of the Seeger Refrigerator Company will gladly co-operate with anyone needing Refrigeration at its best.

All Seeger Branch Offices are equipped to give this co-operation.

SEEGER REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

Madison Ave.,
Between 46th and 47th Sts.
NEW YORK, N. Y.

655-657 So. LaBrea Ave.
LOS ANGELES, CAL.

Statler Building
BOSTON, MASS.

228 North LaSalle St.
CHICAGO, ILL.

"It was built by BOHN"



The handy base cabinet may either be used for refrigerating machinery or the storage of cooking utensils, canned goods, vegetables, etc.

The name BOHN is our warranty that the finest materials obtainable have been utilized by skilled craftsman and refrigeration engineers to build for you this beautiful and scientific product—an all-porcelain BOHN refrigerator.

BOHN installations include many of the leading hotels, restaurants and hospitals in America.

BOHN refrigerators are used exclusively on all Pullman-built railway dining and buffet cars.

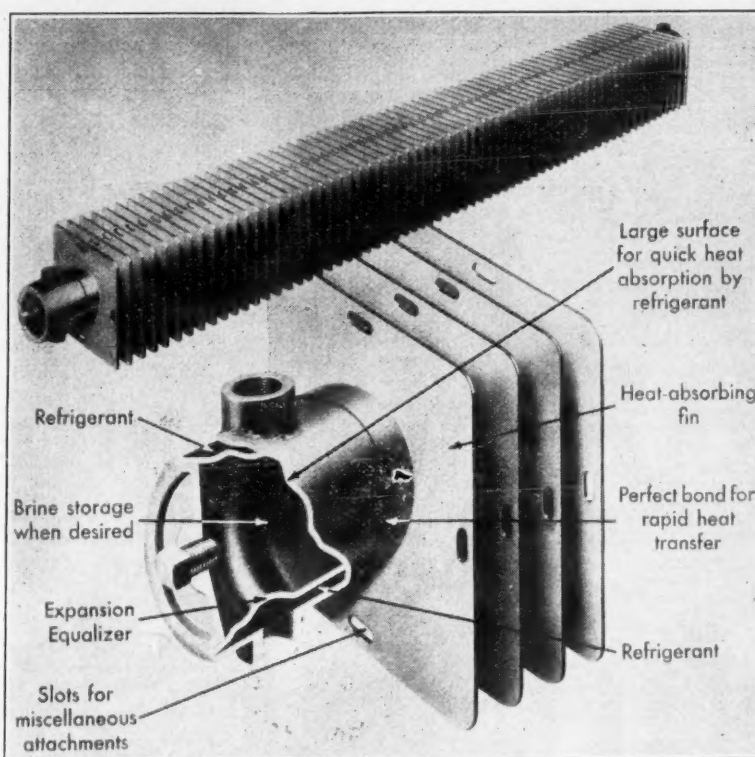
The United States War Department has purchased hundreds of all-porcelain BOHN refrigerators for our army barracks and battleships.

In choosing BOHN refrigerators, discriminating home owners throughout the country have given BOHN a representative list of which any manufacturer might be proud.

Write for details of the remarkably low prices that are now prevailing.

BOHN REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

Hydro Thermal Grids Now On Market



Philadelphia, Pa.—Increasing applications of refrigeration to commercial uses have interested the American Engineering Co., 2662 Cumberland St., Philadelphia, in the commercial coil field. The latest development in this fast expanding field is the Hydro-Thermal Grids for ammonia and methyl chloride refrigeration systems. They are a product of the Refrigeration Division of the American Engineering Co.

The Hydro-Thermal Grids are com-

compact and have flexibility in application. A grid consists of an outer tube with fins, enclosing an inner tube. The fins provide a large heat-absorbing area in very small space, while the tube-within-a-tube construction spreads out the refrigerant in a thin layer in contact with the large area of the outer tube. The refrigerant enters at one end of the tube; the heat-laden gas escapes at the other end. In no case is the gas-travel greater than the length of a single grid. The inner tube can be filled with brine when a hold-over is desired.

heat transfer. The entire grid is hot galvanized, which completes the bond between the metals and prevents corrosion. All grids are tested to 300 pounds pressure.

The grids are made with fins of three sizes and in sections of various lengths. From these standard stock grids, low side units of any size and shape can be readily assembled for application to coolers, refrigerators, room cooling, display cases, frozen food cabinets, etc., with any methyl chloride or ammonia system. They may be used for either the "full flooded" or "dry gas" systems.

In discussing this new development, H. R. Lukens, merchandising manager of the American Engineering Company, stated that "Hydro-Thermal Grids" had been under development for the past year.

"Hydro-Thermal Grids make the sale of low side units virtually an over-the-counter proposition," said Mr. Lukens. "This feature should prove unusually attractive to the dealer, since a comparatively small stock of standard grids is all that is needed to install any low side unit."

"To the user, Hydro-Thermal Grids offer an entirely new kind of mechanical refrigeration, since the large heat-absorbing area of the fins makes it practicable to operate with the surface of the grids at a temperature only slightly below that in the refrigerator or display case. As a result, only a thin layer of frost forms when operating at the temperatures required for fresh foods, and what frost there is disappears entirely between operating periods of the machine."

"The elimination of the need for periodic defrosting enables the dealer to offer a completely automatic system of mechanical refrigeration."

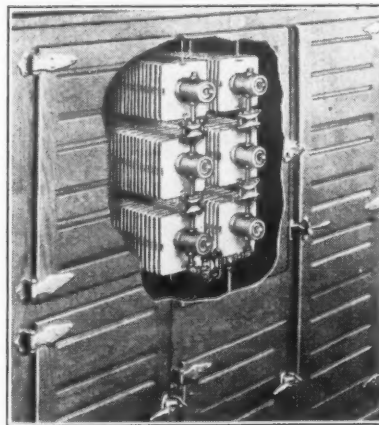
These grids will be sold to manufacturers of cases and coolers, dealers and makers of ammonia and methyl chloride refrigeration systems. Present plans call for an extensive advertising campaign for the new grids.

In addition to producing this new type of coil, the American Engineering Co. makes the Taylor stoker, the "Lo-Hed" electric hoist, Jurick refrigerating machines, and "A-E-CO" auxiliary machinery for naval vessels, commercial vessels and pleasure craft.

FROZEN FRUITS REACH THE OMAHA MARKET

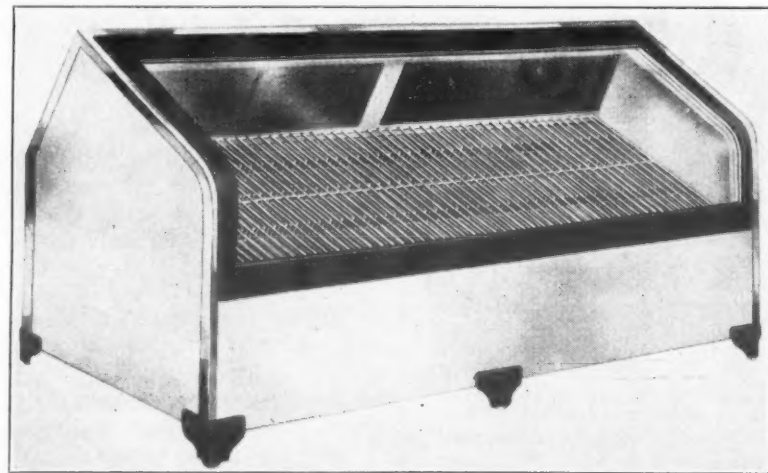
Omaha, Neb.—For the first time frozen fruits are offered to housewives of Omaha. The Harding Cream Company, in an 80-inch advertisement, apprized the strawberry loving public of Omaha that fresh chilled berries were now offered by all local Harding dealers. In the announcement the Harding Cream Co. stated: "Modern methods of transportation, modern refrigeration, electric ice boxes, lower temperatures all along the line, enable us to give you this summer-time delicacy all winter long. This opens a new field to the housewife, in preparing fall and winter menus."

At the same time the Fairmont Creamery Co. offers Omaha frozen cherries, with the further statement that if they show an appreciation of this service other fruits will be added.



Typical Assembly of Grids

Both the tubes and the fins are of steel, which prevents any possibility of electrolytic action between them. Special dies are used throughout for fabricating the parts and a special automatic machine for assembling the grid. The fins are applied under heavy hydraulic pressure, producing a close frictional bond between the fin and tube for rapid



Hydro Thermal Grids Installed in Display Case

GET THE FACTS On This Profit-Making Equipment

Space here will not permit giving you all the information you should have concerning this unique and efficient equipment for the modern merchandising of ice cream. Write for descriptive literature.

When You Manufacture the Ice Cream You Sell You Make All the Profit

UNIVERSAL FREEZER CORPORATION
1113-15-17-19 Penn Avenue
PITTSBURGH, PA.

5 Gallon Original Universal Ice Cream Making Machine

Combining efficiency, utility, beauty, economy and compactness. Outstanding features: 5-gal. freezer (vertical or horizontal), no motors or pipes exposed, formica bakelite used on top and sides, storage for 20 gallons of ice cream mix. The hardening and storage cabinet holds sixty gallons of ice cream. Furnished in any color. Any make of refrigerating machine can be used.

Universal Developing Case

A combined Hardener and Sales Cabinet, equipped with seven drawers. Capacity 14 gallons in moulds which can be cut into quart, pint and half-pint bricks, or 12 gallons in various size packages. Occupies only 22½"x40" of floor space.

Universal Package Filler

Enables you to fill 40 round containers at one time, quickly, easily, full measure and no waste.

Universal "Store Within a Store"

A combined ice cream factory and retail store—4-gallon freezer, storage for 110 gallons of ice cream in bulk and packages—refrigerator for storage of ice cream mix, bottle goods, etc., cold drinking water, shelf display space; fully automatic, thermostat control; excess refrigeration for display case in front.

THE above advertisement will appear in publications reaching ice cream retailers in January. It is our first announcement of this Complete Line of equipment for the modern merchandising of ice cream.

WRITE FOR DISTRIBUTORS' PROPOSITION

BUSH

CONDENSERS

THE BUSH MFG. CO.
HARTFORD, CONN.

W. H. MARK HANNA
6-947 GENERAL MOTORS BLDG., DETROIT, MICH.

NEW YORK CITY

confirms Economy of Water

used in

ELECTROLUX

THE *Gas* REFRIGERATOR

Announces continuation of \$2.50 per YEAR water charge to non-metered water users. Only $\frac{2}{3}$ of a cent per day.

NEW YORK CITY has confirmed the previous practice of making a flat annual charge of not more than \$2.50 per year for all the water consumed by an Electrolux refrigerator of the big Hostess size or smaller. Larger models are charged only a trifle more.

Apartment house tenants, of course, are not affected in any way.

What this means is that the City officials carefully tested the amount of water consumed by Electrolux over a long period of time, under all sorts of conditions. They found that this consumption was ridiculously low—so low, in fact, that a charge of \$2.50 a year where water is not metered amply covered it.

It means that Electrolux-equipped houses with no water meter will pay a flat charge of \$2.50 a year for the water Electrolux uses. And it means that homes where there are water meters will continue to pay for the actual number of gallons Electrolux registers, but they now have this assurance from the Water Department officials that the total for all except the very large models should not be more than \$2.50 per year—21 cents a month— $\frac{2}{3}$ of a cent per day.

All this merely adds one more item of



Municipal Building, New York City—center of the city's official business. Offices of the Department of Water Supply, Gas and Electricity are located here.

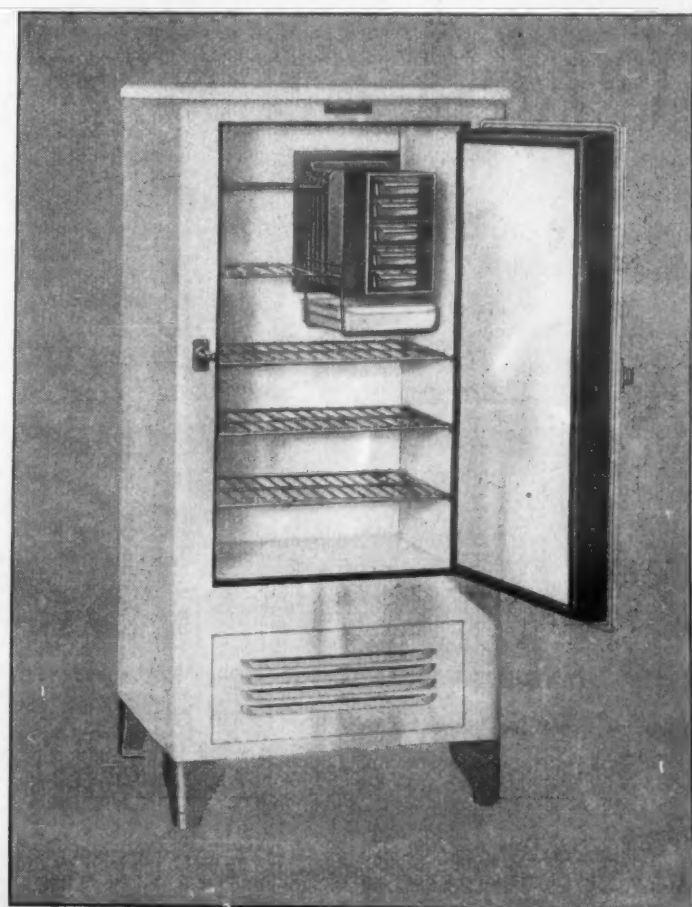
proof to the fact that Electrolux is the most economical refrigerator made. In many localities even the largest models cost as little as 50 cents a month for both gas and water.

And this economy is only one advantage among many that Electrolux has. This refrigerator can't make a sound, because it has nothing to make sound. No machinery, no moving parts at all. Just a tiny gas flame and a thin flow of water are needed to make cold and freeze ice cubes.

And Electrolux is the only automatic refrigerator that works without alternately stopping and starting. The chilling action is continuous, and so the temperature remains constant, steady.

Even the installation of Electrolux is simple. Gas and water connections are made by means of tiny flexible copper tubes.

Electrolux is in use in many of New York's finest apartment buildings such as Town House, London Terrace, 1220 Park Avenue. Prominent builders such as Henry Mandel Companies have put it into one building after another. It has proved itself. Out of the 74 apartment houses that were built in the Bronx the first nine months of this year, 62 were Electrolux-equipped. Electrolux Refrigerator Sales, Inc., Evansville, Ind.



The popular Hostess Model Electrolux. Has 9.2 square feet of shelf space. A tiny gas flame takes the place of all moving parts.

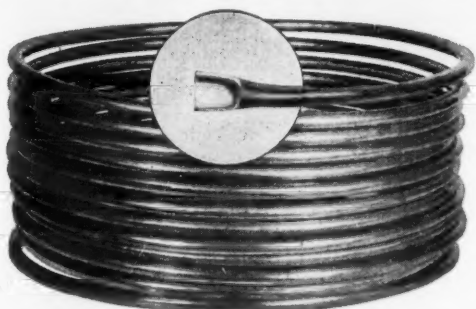


ELECTROLUX

THE *Gas* REFRIGERATOR

DEHYDRATED WOLVERINE SEAMLESS COPPER TUBING

Highest quality seamless copper tubing—perfectly dehydrated and solder-sealed—made to A. S. T. M. Specifications (B-68-30-T)—ready for quick installation. Send your production requirements for quotations, or wire for rush shipment from stock.



WOLVERINE TUBE CO.

SEAMLESS COPPER BRASS & ALUMINUM

1491 Central Ave. Detroit, Mich.

Phone Cedar 5000

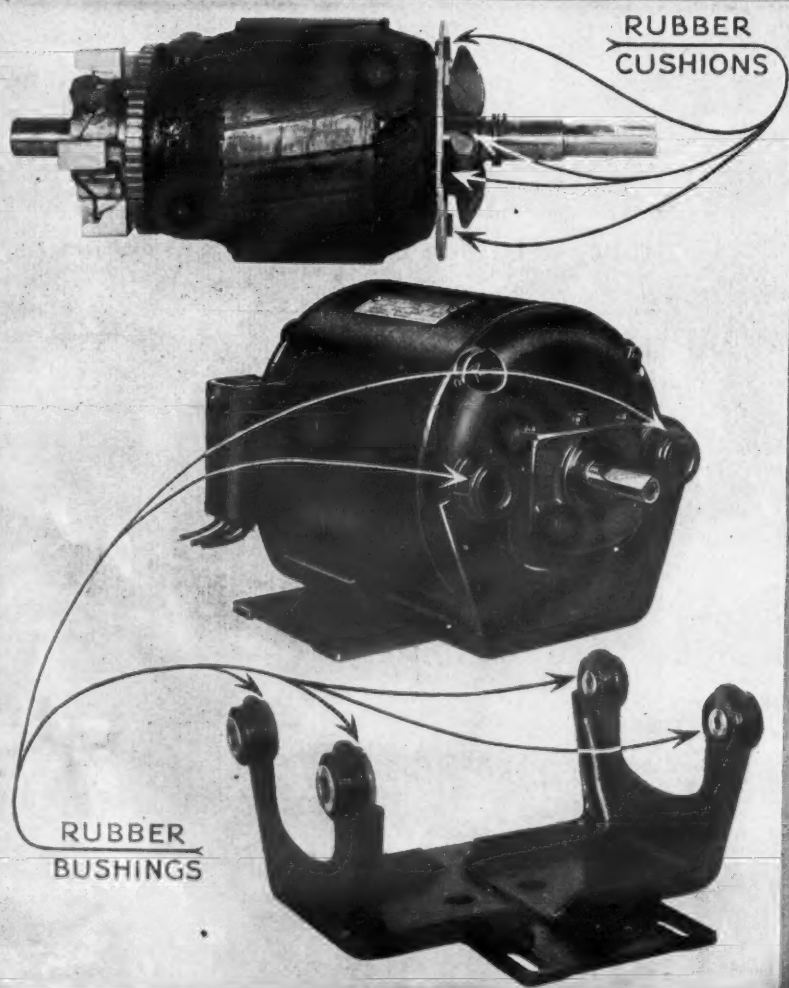
Export Department—H. M. Robins Company,
120 Madison Avenue, Detroit, U. S. A.
Cable Address: Robins, Detroit

Sales offices in all major cities. Stock available at Los Angeles,
224 E. 11th St. Write or wire for name of nearest representative

Rubber Silenced

Wagner refrigerator motors are completely rubber silenced. » » » The motor frame is insulated from the base by means of rubber bushings which absorb electrical and mechanical vibrations. » » » The governor weights are rubber-cushioned to prevent clicking when actuated into running and starting positions. » » » Wagner's method of rubber silencing motors is but one of many reasons why Wagner motors are so widely preferred and adopted by the electrical refrigeration industry.

Ask for a copy of Bulletin 163 describing Wagner rubber-mounted motors.



Write nearest office listed below:

Atlanta, Ga.	Milwaukee, Wis.
Baltimore, Md.	Minneapolis, Minn.
Boston, Mass.	Montreal, Canada
Buffalo, N. Y.	New York, N. Y.
Chicago, Ill.	Omaha, Nebr.
Cincinnati, Ohio	Philadelphia, Pa.
Cleveland, Ohio	Pittsburgh, Pa.
Dallas, Texas	Portland, Ore.
Denver, Colo.	Salt Lake, Utah
Detroit, Mich.	San Francisco, Cal.
Houston, Texas	Seattle, Wash.
Indianapolis, Ind.	St. Louis, Mo.
Kansas City, Mo.	Toledo, Ohio
Los Angeles, Cal.	Springfield, Mass.
Memphis, Tenn.	Toronto, Canada

Wagner

Electric Corporation

4400 Plymouth Avenue, Saint Louis, U. S. A.

MOTORS	TRANSFORMERS	FANS
SINGLE PHASE	DISTRIBUTION	DESK WALL
POLYPHASE	POWER	CEILING
DIRECT CURRENT	INSTRUMENT	VENTILATING

5531-1YA

CHICAGO REACHES AGREEMENT ON

City Council Finally Adopts Ordinance After Two Year Struggle

(Concluded from Page 1, Column 5)

the picture were representatives of the refrigeration industry. Leading manufacturers kept representatives on the job throughout the summer of 1929, supplying expert information, and helping to draw up codes. The strife extended even to these councils. Representatives from the large industrial ice plants were present, too, protecting their interests.

Out of it all came the two departmental codes, a number of inventions and new adaptations of old principles, wide publicity and general public education in refrigeration, and the hastening of agreement on and the adoption of the American Standards Association refrigeration code.

Regulation of the Design, Construction, Installation and Inspection of Refrigerating Systems.

Be it ordained by the City Council of the City of Chicago:

Section 1. That Article two of Chapter seventy-six of The Chicago Municipal Code of 1922 be and the same is hereby amended to read as follows:

ARTICLE 2.

Refrigerating Systems and Cooling Plants.

3677. Duties and inspections.) It shall be the duty of the Chief Inspector of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants and his assistants in addition to the duties specified in Article one of this chapter to inspect all refrigerating systems where the piping, machinery and apparatus is under pressure, including boilers, tanks, jacketed kettles, generators, shell brine coolers, shell condensers, shell absorbers, purifiers, pipe condensers, compressors and pipes used therein, and the apparatus connected therewith and the extensions thereunto. Said Chief Inspector shall make such inspections once in each year. Said Chief Inspector is further authorized to inspect any refrigerating system or apparatus whenever in his judgment inspection is necessary for the protection of life and property.

3678. Classification.) Refrigerating systems shall be classified according to the total weight of refrigerant contained in the system as follows:

A "Class A" system is a system containing one thousand pounds or more of refrigerant;

A "Class B" system is a system containing more than one hundred pounds and less than one thousand pounds of refrigerant;

A "Class C" system is a system containing more than twenty pounds and not more than one hundred pounds of refrigerant;

A "Class D" system is a system containing twenty pounds or less of refrigerant.

For the purposes of this ordinance refrigerating systems shall be further classified as single unit or multiple systems.

3679. General requirements and limitations as to use.)

(a) No refrigerating system shall be placed in: Wards and private rooms of hospitals or asylums, cell blocks of prisons, or any place where people are confined or are helpless.

(b) No refrigerating system except as hereinafter provided containing over five

pounds of refrigerant shall be placed in:

1. Entrances and exits of public buildings.

2. Lobbies and auditoriums of places of public assembly.

3. Dance and assembly halls above the first floor.

4. Entrances and exits of buildings not hereinafter classed as public buildings, having less than two thousand (2,000) cubic feet of volume per pound of refrigerant used.

5. Underground waiting rooms.

6. Subways.

7. Diet kitchens of hospitals.

Provided, however, that the indirect method of refrigeration may be used in such places if all refrigerant-containing equipment is placed in some other room provided with natural or mechanical ventilation as hereinafter required. Every opening between the prohibited spaces and such adjoining rooms shall be provided with close-fitting, self-closing doors.

(c) Subject to the requirements and limitations hereinafter provided no installation of any refrigerating system using a flammable or irritant refrigerant shall be made in:

1. Theatres.

2. Exhibition, dance and assembly halls above the first floor.

3. Buildings containing wards and private rooms of hospitals.

4. Asylum Dormitories.

5. Schools.

6. Police stations and jails.

7. Underground passenger stations.

8. Entrances and exits of buildings.

unless all of the refrigerant-containing parts of the system are placed in a separate machinery room not used for habitable or workshop purposes.

Such machinery room shall have tight walls and shall have no communication with any other part of the building, and shall be entered and ventilated from the outside.

Provided that Class D system wholly confined to a kitchen, laboratory or dining room may be installed in any of the structures or portions of structures named in sub-section C.

(d) Except as hereinafter provided, no refrigerating system using the direct method of refrigeration shall be installed or maintained above the first floor of any building, other than a building used for ice making and/or refrigeration and/or chemical purposes, packing houses or other industries, if such system contains:

(1) Over one thousand pounds (1,000 lbs.) of any refrigerant;

(2) Over two hundred pounds (200 lbs.) of a flammable or irritant refrigerant or

(e) Except as hereinafter provided no refrigerating system using the direct method of refrigeration in excess of one hundred pounds (100 lbs.) of a flammable or irritant refrigerant shall be installed in any building, other than a building used for ice making and/or refrigeration and/or chemical purposes, packing houses or other industries located in industrial districts, unless the pressure-imposing element, condenser, receiver and shell type apparatus are located in a machinery room. Said machinery room shall not be above first floor (unless located on the roof) and shall have tight interior walls and adequate ventilation and shall have all of its openings to other parts of the building protected with close-fitting and self-closing doors.

(f) No refrigerating system using a flammable or irritant refrigerant or any part thereof shall be placed, located or maintained in:

(1) Any room, dinette and kitchenette used for sleeping purposes;

(2) Any room having an adjoining alcove, adjoining room or suite of rooms,

any part of which is used for sleeping purposes, the combined cubical contents of which room is less than four thousand (4,000) cubic feet

unless such room or rooms above set forth in this paragraph are provided with a window or windows, the total window area of such being not less than ten per cent of the floor area of such rooms as set forth in this paragraph and unless such window or windows shall open to the outside air and be so constructed that at least one-half of such window or windows can be readily opened.

(g) Refrigerants composed entirely of hydrogen and carbon shall not be used in Class A, B and C systems.

(h) Direct expansion coils or coolers of systems using non-flammable or non-irritant refrigerant may be installed in the air ducts of air cooling and air conditioning systems on any floor of any building provided:

(1) Coils or coolers are constructed of non-corroding materials or permanent protection against corrosion in same is provided.

(2) The coils or coolers are tested to a pressure of at least one and one-half times the minimum test pressure specified for the refrigerant.

(3) Provided that the total refrigerant content of systems containing more than 500 lbs. of refrigerant shall not exceed 1 pound for 150 cubic feet of volume in the space to which the air is conducted.

(i) All poisonous or toxic refrigerants used in any direct system of refrigeration shall have a distinct and easily detectable odor or characteristic irritating properties.

3680. Permit and approval required—plans and specifications.) No new apparatus or plants for refrigerating or cooling purposes shall be installed, erected or maintained nor shall any reconstruction of old apparatus or old plants for refrigerating or cooling purposes be undertaken unless plans and specifications for the same shall be filed in the office of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants, and approved by the Chief Inspector of said department. Such plans and specifications shall show the kind and amount of refrigerant used. Upon approval of said plans, a duplicate set of which shall be left on file in the office of the Chief Inspector, and the payment of the respective fees, as hereinafter provided, said Chief Inspector shall issue a permit for the installation of said apparatus or plants.

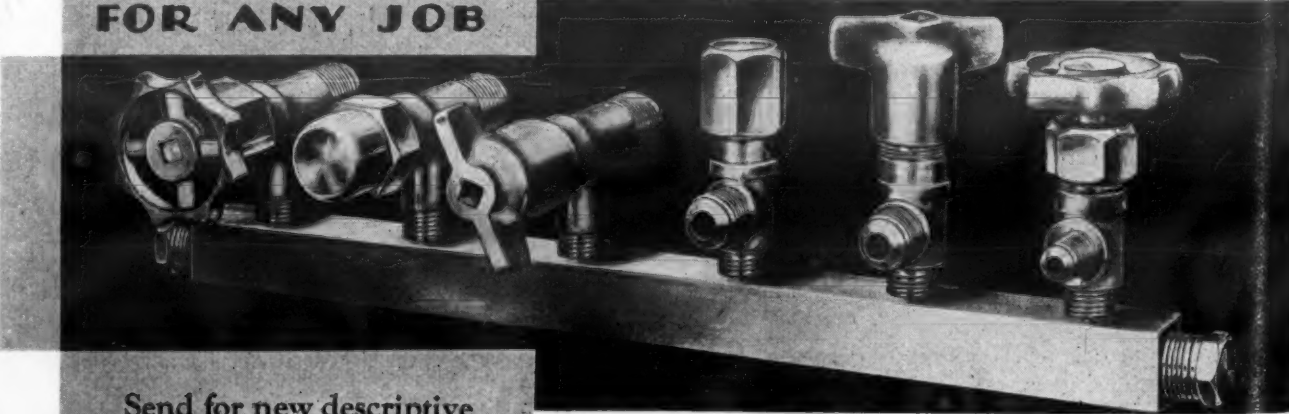
Provided, however, that only the general plans and specifications for each type or model of a single unit system which can be removed from the user's premises either with the refrigerated cabinet or separately without disconnecting any refrigerant containing parts shall be submitted to the Chief Inspector for the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants for examination and approval. Based on the inspection and approval of such types or models of single unit system, a general permit shall be issued by the Chief Inspector of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants, authorizing the placing or installing of such approved types or models. No annual inspection shall be required on a unit system used for household purposes installed by authority of said general permit, provided that nothing herein contained shall prevent the said Chief Inspector from inspecting any such unit system used for household purposes whenever in his judgment inspection is necessary for the protection of life and property.

3680a. Fees.) The permit fee for Class B household multiple and remote systems shall be \$5.00 for each pressure imposing element and 25c for each evaporator. The permit fee for Class C household multiple and remote systems shall be \$5.00 for each pressure imposing element.

(Continued on Opposite Page)

KEROTEST MANIFOLDS

ARE READY
FOR ANY JOB



Send for new descriptive catalog covering Kerotest manifold valves and fittings—just off the press.

KEROTEST

Equipped with any style of seal caps you may specify or with packless valves if you so prefer. A wide choice for your every specification.

KEROTEST MANUFACTURING CO.
Pittsburgh, Pa.

SAFETY CODE FOR REFRIGERATION

(Continued from Opposite Page)

ing element and 25c for each evaporator. The permit fee for Class D household multiple and remote systems shall be \$3.00 for each pressure imposing element and 25c for each evaporator.

The permit for Class A systems other than household single unit systems, and household multiple and remote systems shall be \$10.00 for each pressure imposing element. The permit fee for Class B systems other than household single unit systems, and household multiple and remote systems shall be \$5.00 for each pressure imposing element. The permit fee for Class C systems other than household single unit systems, and household multiple and remote systems shall be \$5.00 for each pressure imposing element. The permit fee for Class D systems other than household single unit systems, and household multiple and remote systems shall be \$3.00 for each pressure imposing element and 25c for each evaporator.

The fee for inspection of Class B household multiple and remote systems shall be \$8.00 for each pressure imposing element and 25c for each evaporator. The fee for inspection of Class C household multiple and remote systems shall be \$3.00 for each pressure imposing element and 25c for each evaporator. The fee for inspection of Class D household multiple and remote systems shall be \$3.00 for each pressure imposing element and 25c for each evaporator.

The fee for inspection of Class A systems other than household single unit systems, household multiple and remote systems shall be \$20.00 for each pressure imposing element. The fee for inspection of Class B systems, other than household single unit systems, household multiple and remote systems shall be \$10.00 for each pressure imposing element. The fee for inspection of Class C systems other than household single unit systems, household multiple and remote systems shall be \$5.00 for each pressure imposing element. The fee for inspection of Class D systems other than household single unit systems, household multiple and remote systems shall be \$5.00 for each pressure imposing element.

All fees required hereunder shall be paid to the City Collector.

3681. Certificate of inspection to be posted.) When an inspection of a refrigerating system as required in this ordinance has been made and same approved by the Chief Inspector he shall make and deliver to the person for whom the inspection was made, upon the payment of fees prescribed in this article, a certificate of such inspection which shall contain the date of inspection, together with a general description of the plant, amount of refrigerant contained therein and the pressure in pounds per square inch under which it may be safely operated. Such certificate shall be framed and posted in a conspicuous place in the compressor room.

3681a. Manufacturers and dealers—notify department.) Any person or corporation manufacturing, dealing in, selling or erecting refrigerating systems or apparatus as defined by this ordinance shall, on the sale or delivery of any such system or apparatus at any point or locality within the city, notify the Chief Inspector of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants, giving the name of the purchaser, his street address and the street address where said system or apparatus is to be or has been delivered.

3682. Construction of pressure vessels.) Boilers, tanks, generators, liquid receivers, shell brine coolers, shell condensers, shell absorbers, purifiers and other vessels subject to pressure shall be constructed of such material and in such a manner as shall conform to the rules for unfired pressure vessels which are issued by the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants.

3682a. Piping, fittings, etc.) All steel pipe, wrought iron pipe, seamless copper tubing shall conform to the specifications for such material as issued by the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants. All refrigeration piping, tubing, fittings and valves shall be of material which in the judgment of the Chief Inspector shall be suitable for the refrigerant used.

For test pressures exceeding 150 lbs. per square inch extra heavy steel or wrought iron pipe shall be used and connected by extra heavy fittings.

For test pressures not exceeding 150 lbs. per square inch pipe or seamless tubing of not less than standard pipe thickness shall be used.

Steel or wrought iron pipe may be connected by the acetylene or electric welding process provided that it is in conformity with the rules for welding of steam piping as issued by the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants.

For refrigerating systems of Class C or D, when not fulfilling requirements of the above paragraphs, seamless copper tubing or tubing of other suitable metal of not less than thirty-four thousandths of an inch wall thickness shall be used. Provided, further, that the joints are sweated or brazed or properly annealed and flared or other construction approved by the Chief Inspector.

On Class A and B systems the discharge pipe between compressor or generator and condenser connections shall be of extra heavy material, provided with two stop valves and all flange fittings shall be of tongue and grooved type or recessed gasket type.

In all Class C systems and in all Class D multiple refrigerating systems where seamless metal tubing of less than standard pipe thickness for refrigerant line or lines is used, the refrigerant line or lines shall be enclosed in iron pipe or tubing or other metal enclosures. The enclosures may be of flexible metal at bends or terminals if not exceeding six feet in length and if enclosure is rigidly secured to the wall or other supports. No metal enclosure shall be required for refrigerant lines between the pressure-imposing element, condenser, or shell type apparatus and the nearest riser box, provided these lines do not exceed six feet in length and are located within the refrigerating machinery room where such room is required.

All valves and fittings in such system except those with the evaporator, pressure-imposing element, liquid receiver or shell type apparatus and every connection of tubing shall be arranged in or on a suitable metal box and shall be rigidly attached thereto or to the supports thereof. Every such box shall have an accessible door or removable cover.

Shut-off valves for systems extending into living quarters shall be installed at the following locations: At each service outlet in pressure and return lines, and in each riser or manifold connection at or near the compressor. These valves shall be fitted with a hand wheel or other means of ready operation as an integral part thereof.

Valves in service connections for systems extending into living quarters shall be located outside of refrigerating unit and at such distance above the floor as will provide ready accessibility.

Evaporators of low-side float type which may be removed as a unit shall have valves permitting the removal of the evaporator with valves attached.

No tubing joint shall be placed in conduit.

Not more than one refrigerator shall be connected to any outlet box. Every such outlet box shall be located within the premises containing the refrigerator, but not within the refrigerated space, and shall be readily accessible at all times. No outlet box shall be located in any hallway, stairway or vertical shaft.

Every opening from or into a metal free from sharp edges which might in enclosure for refrigerant lines shall be jure the tubing.

Service valves shall be installed in both connections to every household flooded type evaporator that can be removed from the refrigerator as a unit, in such a manner as to permit the removal of the evaporator with valves attached. This is not required on unit systems.

Every Class B multiple refrigerating (Concluded on Page 14, Column 2)

SAFETY

IN all codes designed to protect human life the provisions for safety depend almost entirely on the good quality, proper processing, and accurate installation of materials.

Refrigerants of any character require confining with tube fittings positively leak-proof and it is for this reason that all codes specify Forged Fittings.

The close granular structure of Commonwealth Tube Fittings, made from forgings or extruded rod, insures exact compliance with all codes.

In addition, every fitting is machined to close limits, carefully inspected and with every tube seat protected by a cardboard ferrule, to prevent nicked seats in shipment.

**SEEPAGE PROOF FITTINGS
SPELL SAFETY**

Send for catalog No. 36, describing the most complete line of fittings for the automatic refrigeration industry.

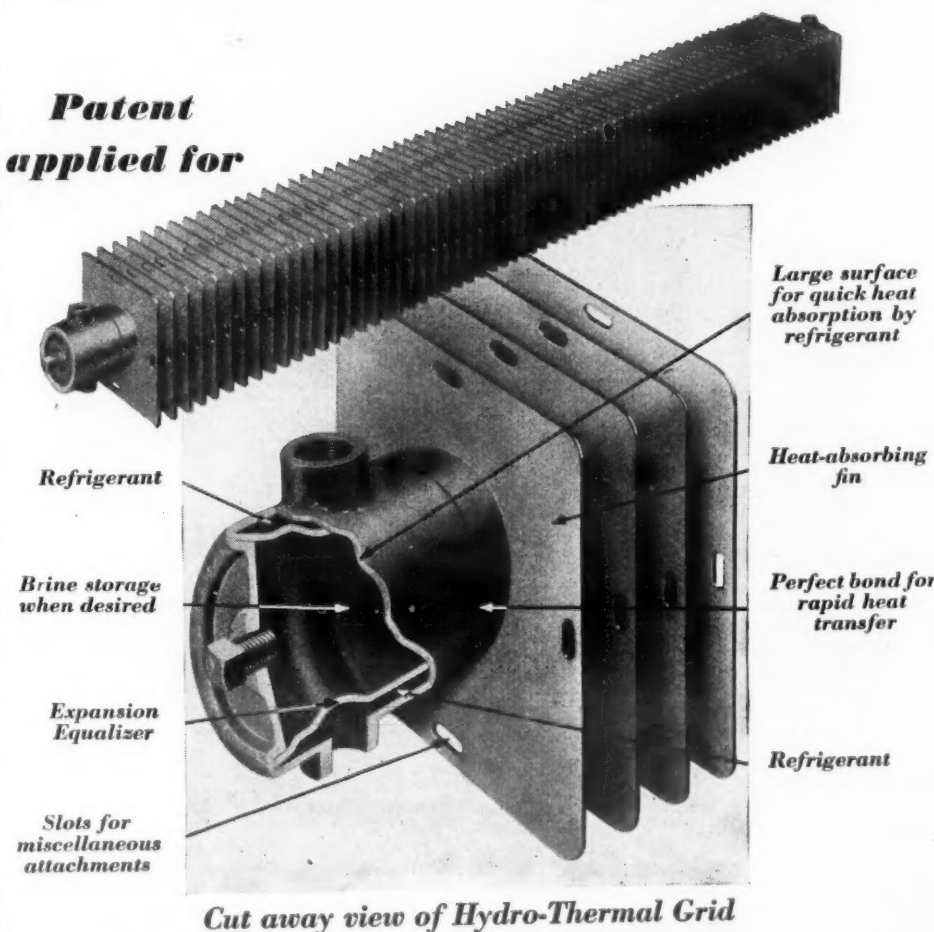
**COMMONWEALTH
BRASS CORPORATION**
Commonwealth and Grand Trunk R. R.
DETROIT, MICH.

HYDRO-THERMAL GRIDS

**the amazing new
"tube-within-a-tube"
low side finned units**

They are chock full of new features . . . heat-absorbing fins, tube-within-a-tube design, all-steel construction, short gas travel, non-frosting operation . . . all combined in standard stock grids. From these stock grids any size and shape of low side can be readily assembled for use with any ammonia or methyl chloride system.

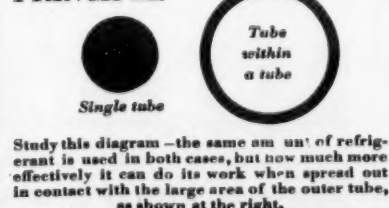
Every feature of the Hydro-Thermal Grid is designed for rapid heat absorption. Fins are of No. 18 gauge steel to provide the thickness required to efficiently carry the heat flow produced by the rapid heat absorption on the two surfaces. Wide flanges on the fins are forced by hydraulic pressure into a close frictional bond with the outer tube . . . a bond that is further perfected by hot galvanizing the entire grid. Between the tubes, the refrigerant is spread out in a thin layer in contact with the large surface of the outer tube for maximum cooling effect.



"Over-the-counter" Selling Without Special Engineering

The Hydro-Thermal Grid combines the advantages of the "finned coil" and "sectional coil" in standardized stock grids for "over-the-counter" delivery and easy assembly. Made with three sizes of fins and in a variety of lengths, these grids can be combined in low sides of any size and shape. They make it a simple matter to figure and sell low sides without special engineering or special manufacturing . . . open new profit-building possibilities to the progressive dealer.

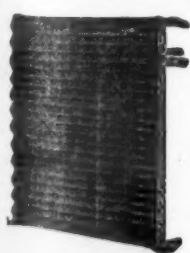
THE TUBE-WITHIN-A-TUBE PRINCIPLE



Hydro-Thermal Grids are applicable to refrigerators, coolers, room cooling, display cases, frozen food cabinets, etc. They are equally suited for either the "full flooded" or "dry gas" systems. To the manufacturer of refrigerators and cases Hydro-Thermal Grids offer almost unbelievable refrigerating effect in minimum space, release bunker space for food storage and display and solve the problem of providing the low temperatures required with small, compact, low side units.

FLINTLOCK CONDENSERS

Full Capacity



With
Every
Unit

FIN AND TUBE SAME
SOLID PIECE OF
MATERIAL

FLINTLOCK CORPORATION

4461 W. Jefferson Ave.
DETROIT, MICH.



AMERICAN ENGINEERING

AMERICAN ENGINEERING COMPANY, 2420 ARAMINGO AVENUE, PHILADELPHIA



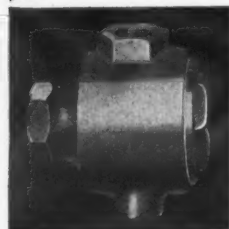
PATENTS
Searches, Reports, Opinions by a
Specialist in REFRIGERATION
H. R. VAN DEVENTER
Solicitor of Patents Refrigeration Engineer
312 MADISON AVE. NEW YORK

REFRIGERATION RUBBER WARE
Door and Frame Insulating Strips, Gliders for Refrigerator Legs, Top Hole Sections, Lid Collars, Sleeves, Brine Hole Stoppers for Ice Cream Cabinets, etc. Specializing in Parts Made to Customer's Design.
THE AETNA RUBBER CO.
ASHTABULA, OHIO

Why Waste Water?

INSTALL THE "EBCO"

SELF-CLOSING AUTOMATIC STREAM CONTROL VALVES



REGULATOR

for installation in water supply lines to prevent fountains 3/4" I. P. Inlet and Outlet.

Automatic control of the stream height is guaranteed under all fluctuating pressures between 20 and 120 pounds. The "EBCO" valve insures economy and eliminates objectionable squirting.

Write for Complete Catalog of EBCO Valves and Drinking Fountains.

EXPOSED TYPE
Chrome plated union in let—3/4" I. P. outlet.
C-1300 2-prong handle
C-1300 H-4 prong handle
C-1300 L-Lever handle.

THE D. A. EINGER SANITARY MFG. CO.
COLUMBUS, OHIO

Manufacturers of EBCO Drinking Fountains, Ventilated Urinals and Closets, Round Wash Sinks and Steel Compartments for toilet rooms.

CHICAGO ADOPTS SAFETY CODE FOR REFRIGERATION

(Concluded from Page 13, Column 3)

system extending into any living quarters shall be connected by extra heavy pipe. All fittings and valves except for ammonia and carbon dioxide systems shall be of the forged type. Each such valve or fitting shall be rigidly supported but need not be enclosed. Connections from refrigerator service valves to the evaporator shall be of the same material.

Every liquid level gauge glass shall be of sufficient strength to withstand the high side test pressure and, except those of the bull's eye type, shall have automatic closing shut-off valves and shall be adequately protected against injury by slotted metal casings.

No refrigerant line shall be located in any elevator, dumb-waiter or any other shaft containing moving objects.

All piping and tubing containing refrigerant shall be supported to prevent excessive vibration and strains at joints and connections. Hangers and braces shall be of flat angle or round wrought iron or steel, rigidly secured by screws or bolts.

Every evaporator used in a household refrigerator, unless constructed of sufficient strength to prevent injury in the ordinary and customary use thereof, shall be protected by suitable shield to assure protection against such injury. Every such evaporator shall be firmly anchored or secured in such manner as to make it immovable.

Every refrigerator cabinet, box, casing or refrigerated space containing or enclosing any evaporator of any multiple refrigerating system using the direct method of refrigeration shall be firmly and securely anchored and fixed to a wall, floor or other immovable object in such manner as to hold such refrigerator, box or casing enclosing the evaporator securely in place.

3682b. Safety devices.) On any Class A, B or C system, a pressure relief valve must be located between compressor or generator and the first stop valve. Discharge of safety valve must be piped into the suction line.

A rupture member may be substituted for the pressure relief valve in carbon dioxide systems.

The size of pressure relief valves shall be as follows:

Total Weight of Refrigerant	No. Required	Carbon Dioxide and Ethane Refrigerants	Size	Other Refrigerants	No. Required	Size
Up to 1,000 lbs.	1	1/2"	1	1/2"	1	1/2"
1,000 to 1,800 lbs.	1	3/4"	1	3/4"	1	3/4"
1,800 to 3,000 lbs.	1	1"	1	1"	1	1"
3,000 to 5,250 lbs.	1	1 1/4"	1	1 1/4"	1	1 1/4"
5,250 to 7,500 lbs.	1	1 1/2"	1	1 1/2"	1	1 1/2"
7,500 to 13,500 lbs.	1	2"	1	2"	1	2"
13,500 to 27,000 lbs.	1	2 1/2"	2	2 1/2"	2	2 1/2"

Every Class A, B and C refrigerating system operating above atmospheric pressure shall be provided with a pressure-limiting device to stop the action of the pressure-imposing element at a pressure less than 90% of the setting of the pressure relief device on the high pressure side.

Every pressure relief valve, pressure limiting device and rupture member shall be set to prevent the pressure exceeding the test pressure for the refrigerator used, as set forth hereafter in this code.

The low pressure side of every Class A or B system shall be provided with a hand operated relief valve for discharging the refrigerant in case of fire, either to the outer air through a free vent or to a suitable body of water. The hand operated relief valve shall be located outside the machinery room or shall be capable of operation from the outside. The handle of this valve shall not be removed.

Condensers, liquid receivers and every shell type apparatus which can be shut off by stop valves shall be equipped with a pressure relief valve set at pressures not exceeding the safe working pressure as computed by the rules of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants. Safety valves shall discharge as hereinafter provided.

No stop valve in any refrigerating system shall be located between pressure relief device or pressure limiting device and the part of the system protected thereby, unless two such devices are used and so arranged that only one can be shut off for repair purposes at any one time.

Where an irritant or flammable refrigerant is used in Class A or B systems, the discharge from the pressure-relief valves on the high pressure side must be conducted to the outside atmosphere or into that part of the low pressure side protected by the low pressure relief valve. The discharge to the outside atmosphere from either the high or low pressure side must be no less than twelve feet (12') above the adjoining ground level and not closer than ten feet (10') to any opening in any building, or closer than twenty feet (20') to any fire escape. The discharge pipe shall be not less than the size of the relief valve outlet. The discharge from more than one relief valve may be run into a common header, the cross sectional area of which shall be equal to the combined cross sectional areas of the pipes connected thereto. The outlet shall be turned downward.

Where ammonia is used in a Class B or C system the discharge from relief valves may be into a tank of water which shall be used for no purpose except ammonia absorption. At least one gallon of fresh water shall be provided for every pound of ammonia contained in the system. The water used shall be prevented from freezing without the use of salt or chemicals. The tank shall be substantially constructed of a thickness of not less than one-eighth inch (1/8") or the equivalent of No. 11 U. S. iron gauge. No horizontal dimension of the tank shall be greater than one-half (1/2) the height. The tank shall have a hinged cover or, if of the enclosed type, shall have a vent hole of ample capacity at the top.

All pipe connections shall be through the top of the tank only. The discharge pipe from the pressure relief valves shall discharge the ammonia in the center of the tank near the bottom.

No connection shall be made with the public water supply which will impair the purity thereof. Water used for removing heat from a refrigeration system shall not thereafter be used for drinking purposes.

On every machine over two tons' capacity using a flammable or irritant refrigerant, a high and low pressure check

Cooling Plants, and shall be applied to every refrigerating system, or parts thereof, installed before being put into use.

Tests of installation in new buildings shall be made before the piping and connections of the system are covered up or made inaccessible.

It shall be the duty of every person, firm or corporation installing refrigerating systems, as aforesaid, to notify the Chief Inspector of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants whenever any system has reached the stage of construction where it is ready for inspection tests.

The testing of every refrigerating system shall include a pressure or vacuum test of the complete piping system, preferably with the evaporator installed, but valves thereon may be closed to prevent withdrawal of the refrigerant.

Under these tests a partial vacuum of twenty inches of mercury shall be produced within the system and shall be held for a period of at least one hour with no detectable drop.

Every part of every refrigerating system, except pressure gauges and control mechanism, shall be designed, constructed and assembled to withstand safely, and without injury, the following required minimum test pressures which shall be applied for the pressure test. These test pressures shall be held by every refrigerating system under test for a period of at least eight hours without an appreciable fall.

Refrigerant Used	High Pressure Side	Low Pressure Side
Carbon dioxide	1,500	750
Ethane	1,100	550
Ammonia	300	125
Propane	250	125
Methyl chloride	175	125
Sulphur dioxide	135	100
Isobutane	135	100
Butane	100	50
Ethyl chloride	100	50
Dichloromethane	15	15
Trichloroethylene	15	15
Dichloroethylene	15	15

For other refrigerants not herein enumerated, the Chief Inspector of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants shall determine the test pressures to be applied.

3684. Operating precautions.) It shall be the duty of the person in charge of the premises wherein any refrigerating system is located to exercise due diligence to see that the refrigerating system is properly maintained and operated at all times.

A gas helmet or mask suited to the refrigerant used shall be provided with every Class A system, and with every Class B system that operates above atmospheric pressure, except when carbon dioxide is used.

Every gas helmet or mask shall be of a type approved by the Chief Inspector of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants as being suitable for the refrigerant used, shall be inspected annually by said Chief Inspector and shall be kept in operative condition in an easily accessible case or cabinet.

Whenever a flammable or irritant refrigerant is drained from any system it shall be discharged into a suitable absorbent or container which shall not be connected to the system except during period of charging or withdrawing the refrigerant.

In testing with air pressure care shall be taken to prevent the temperature at any point from rising above one hundred and thirty (130) degrees Fahrenheit.

Whenever the losses of a flammable or irritant refrigerant from a residential multiple system are such as to endanger the health or lives of the human occupants of any room or structure in which such refrigerating system, or any part thereof, is located, it shall be the duty of the owner of such refrigerating system to apply suitable pressure or other tests to prove the system tight.

3685. Instructions and refrigerant charges to be posted.) It shall be the duty of the owner of any refrigerating system, except a Class D system, to post and keep conspicuously posted as near as practicable to the pressure-imposing element of such system a card giving operating directions for such system, including precautions to be observed in case of a breakdown or leak. The following shall be included in the instructions and information listed on such cards:

1. Instructions for shutting down the system in case of emergency.
2. The name, address and telephone number of every engineer or operator in charge.
3. The name, address and day and night telephone number for service.
4. The location of the nearest fire alarm box.
5. The telephone number of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels and Cooling Plants, and instructions to notify said department immediately in

Brighten up your dull months!

Are you looking for something to add to your line—a home specialty which will bring in money when refrigerators are at the low point—a device in no way competitive with refrigerators yet similar in selling method, market, installation? Then write for our liberal distributor proposition on Thermo-King, an admirably simple, efficient, time-tested thermostatic control for hand-fired and automatic home-heating with coal. Other refrigerator distributors have filled out the valleys in their yearly sales curves with Thermo-King. You can, too.

Write today for information
HEAT CONTROL CORPORATION
Hatfield, Mass.

WE BUY New and Used ELECTRIC REFRIGERATORS In Any Condition

Phone, Write or Wire All Details, Type of Motor, Size of Box, Etc.

KASKEY & QUINN, Inc.
525 Arch Street Philadelphia, Pa.

case of serious leakage or other emergency.

6. The date, amount and kind of refrigerant placed in the system at the time of initial charging and every subsequent recharging, and the name and address of the person, firm or corporation charging or recharging the system.

The manufacturer of every unit refrigerating system shall mark upon the name or model plate thereof the kind of refrigerant contained within the system. Every Class A, B, C, and Multiple Class D system shall have the name of the refrigerant painted or affixed in a permanent manner either to the pressure-imposing element or to the piping in proximity thereto. The kind of refrigerant and instructions for shutting off refrigerant shall be prominently posted at the branch valves used for shutting off each evaporator or set of evaporators contained within each refrigerated space.

3686. Penalty.) Any person, firm or corporation violating any of the provisions of the foregoing sections of this ordinance shall be fined not less than \$25.00 and not more than \$200.00 for each offense.

Section 2. This ordinance shall be in full force and effect from and after its passage and due publication.

SERVICE MAN DISCUSSES USE OF BRINE, ALCOHOL

COPELAND SALES COMPANY
Mount Clemens, Michigan
Dec. 8, 1930.

Electric Refrigeration News, Detroit, Mich.
Gentlemen:

I have just read article one of Helpful Service Hints, written by Frank W. Gray, and contained on page fourteen of your December 3rd issue of ELECTRIC REFRIGERATION NEWS. The use of alcohol and calcium chloride brines is discussed, with a word of caution directed particularly to the users of alcohol.

Since alcohol is universally recognized as far superior to calcium chloride and absolutely non-corrosive, we suggest that you have a correction of Mr. Gray's article published. This to avoid misunderstandings in the field.

Yours very truly,
E. N. GUILD,
Service Department.

COPELAND SALES COMPANY
Mount Clemens, Michigan
December 19, 1930.

Electric Refrigeration News, Detroit, Michigan.
Gentlemen:

Supplementing my letter of December 8th concerning the use of alcohol and calcium chloride brines, I especially submit the following for consideration:

Calcium chloride has long been used for non-freezing solutions in ice-making plants and other large industrial applications because it is inexpensive, odorless and does not evaporate. Probably its almost universal use in these circulating brine systems is responsible for the futile attempts that have been made to adapt it to small commercial cooling tanks and even to household refrigerators. Unfortunately, its chief disadvantage, that of corrosion, prevents it from becoming the answer to a problem that has confronted the refrigeration industry for many years.

Calcium chloride brine will attack metals used in the construction of a refrigeration system quite actively, and brass, copper, zinc and similar metals which are considered non-corrosive by laymen are no exception. This corrosion is due to electrolytic action, oxidation, acidity, and caustic alkalinity, depending on the composition of the brine and the nature of the metals in contact with it. Electrolytic corrosion is avoided with difficulty, for the use of dissimilar metals, or even metals of different quality, will cause it. Moreover, certain impurities are always imbedded in the surface and each particle completes a tiny electrolytic cell, setting up a local action at the expense of the brine container.

Corrosion-retarders, such as slaked lime, sodium chromate, carbon dioxide, etc., have been used with calcium chloride with fair success, but it should be recognized that these agents only minimize the natural corrosion and do not entirely prevent it.

Ice manufacturers and other operators of systems requiring large quantities of brine which is subject to weakening by evaporation, dilution and loss, are obliged to use calcium chloride to keep maintenance costs as low as possible; but the disadvantages certainly outweigh the advantages when we consider its use for household refrigeration and small commercial non-circulating systems. Most of these brine tanks are hermetically sealed—filled with a brine simply to give them mass and increase their capacity for specific heat—why, therefore, should they contain "neutralized" calcium chloride which immediately begins to consume the evaporating coils and other parts of the system which it comes in contact. Alcohol or glycerin or anti-freezing compounds of a similar nature can be introduced for a slight additional cost per tank, and no more corrosion will be encountered

(Concluded on Page 15, Column 1)

New HOTEL ADDISON

Featuring Comfort Quality and Service

450 ROOMS of REAL COMFORT

\$2.00 A DAY

Special weekly and monthly rates

GARAGE IN CONNECTION

L. MCGREGOR Manager



DETROIT

WOODWARD AT CHARLOTTE

ALCOHOL AND BRINE IN REFRIGERATING SYSTEMS

(Concluded from Page 14, Column 5)
than with ordinary water. As such tanks are usually built of copper or special rust-resisting alloys, the difficulty from this source is practically nil.

Few installation and service men recognize fully the importance of neutralizing calcium chloride brine and have even neglected this duty entirely. Failure to do so has caused countless numbers of brine tanks, built of heavy gauge copper, to be consigned to the scrap heap within one or two years.

It is true that some specially denatured alcohols contain acids and corrosive substances in solution, added to prevent the use of the alcohol for beverage purposes, but these formulae are for manufacturers only and such specially denatured alcohols are only sold under government permit. Completely denatured alcohol is made at present under two formulae, and they are given herewith:

FORMULA NO. 1

100 parts by volume ethyl alcohol
10 parts by volume wood alcohol
.5 parts by volume benzine (kerosene)

FORMULA NO. 2

100 parts by volume ethyl alcohol
4 parts by volume wood alcohol
.5 parts by volume benzine (kerosene)
.75 Alcohol—Grade A.

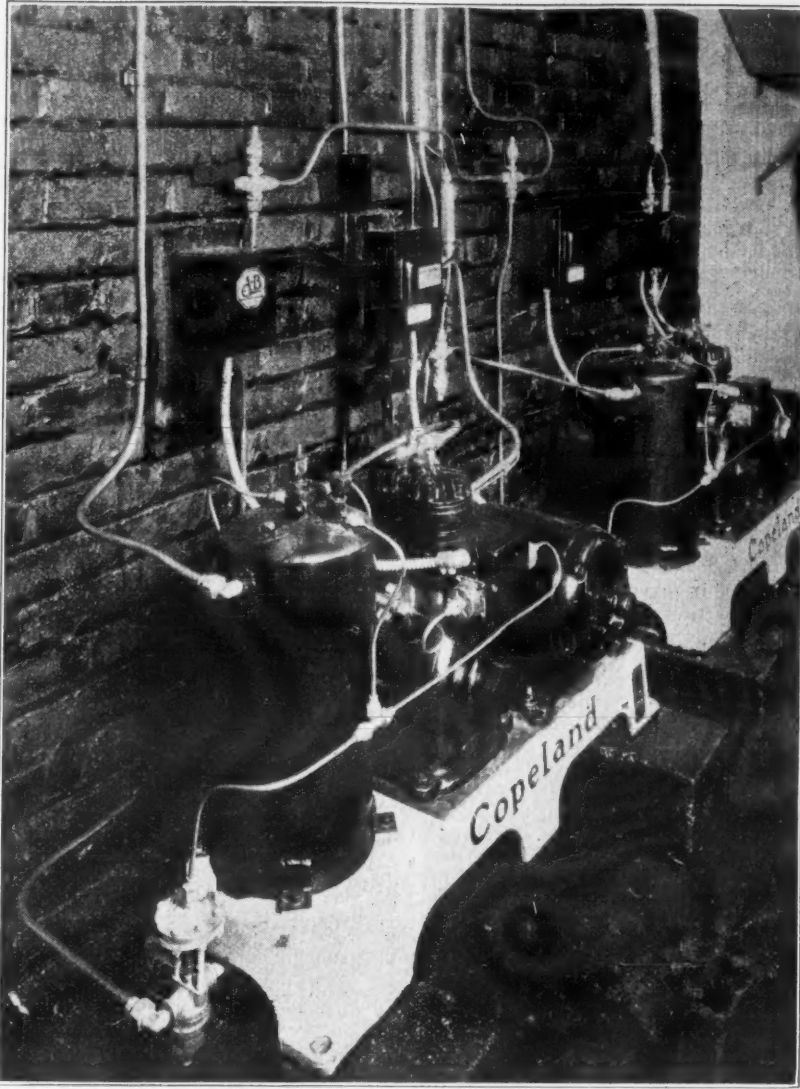
These alcohols are sold at gasoline filling stations, hardware stores, etc., for use in anti-freezing solutions, and are the only kinds obtainable without a permit. None of the constituents could properly be classified as corrosive. Commercial wood alcohol will test acid to litmus paper, due to the impurities it contains, but the amount is negligible.

The writer deprecates the use of calcium chloride for fractional-ton systems, and trusts that ELECTRIC REFRIGERATION NEWS can expose its demerits by promoting controversy on the subject.

Yours very truly,

E. N. GUILD,
Service Department.

New Copeland Multiple in Chicago



Chicago, Ill.—The Copeland-Chicago Branch office has just completed an installation of a multiple system of refrigeration in the Gothic Apartments, located at 6527-29 Kenwood Avenue, Chicago. The Gothic Apartment building is 11

stories high, contains 39 apartments, with a minimum rental of \$150.00 per month. The system used is a Copeland Dry Multiple, employing two Model X 1½ h. p. condensing units which are installed in the basement.

SERVICE HINTS

By FRANK W. GRAY

Methods of handling large drums of liquid refrigerant in the service shop are frequently so awkward as to result in considerable loss in transference to smaller steel bottles, and danger to the men breathing the gas which is carelessly released. At small expense a sturdy rack can be constructed to hold these large storage drums, head down, for convenient dispensing of their contents. An old compressor (½ h. p.) can be rigged up to pump a vacuum on the tubing connectors. With this arrangement it will not be necessary to purge the air out of the tubing connections, nor will it be necessary to heat the storage drums in order to drive the liquid refrigerant into the smaller containers.

Service men should be constantly warned about carelessly purging tubing and compressors on the job. Severe sickness has too often resulted from releasing gases into the air which is being breathed. Whether or not refrigerants have poisonous properties, the fact remains that air saturated with any gas is too low in oxygen content to be safely breathed.

It is common practice among refrigeration service men to test for leaks in apartment house systems by pumping a vacuum on the installed lines of tubing, and testing this vacuum for several hours with a gauge. If the compressor to be used in operating the job is used in pumping this vacuum test, there is a tendency for the oil in its crankcase to be sucked away into the system when the vacuum is released. This frequently results in a dry compressor when the job is put in operation. A small special compressor should be used for testing, after which the larger machine to be used on the system may be hooked up to start the operation.

Some service men have a dangerous habit of testing for refrigerant leaks with a lighted match. Aside from the general stupidity involved in testing for any kind of a gas leak with a match, severe burns have been known to result from this practice.

There is no reason for refrigeration service men to go out on the job dressed in filthy, greasy clothing. Service work on refrigeration machines, in most of its phases, should not be extremely dirty. The white overalls with the trademark sewed into the back, used by some progressive dealers, are clean and neat in appearance and indicate high quality refrigeration service.

Commercial installations frequently demand window displays of frosted coils. Rigid copper pipe, with elbows instead of bends at the corners, makes a neater installation than flexible copper tubing. In all window display installations, where constantly frosted coils are desired, and where a high heat leakage factor is involved, the flooded system or the brine circulating system will produce the best results. Care should be taken to insure an ample reservoir of liquid refrigerant—otherwise the machine is apt to operate in short jerky cycles, or all of the time.

Where tubing must be run beneath floors, producing unavoidable oil traps in the suction lines, a double suction line—one line being carried below the other—will usually solve the difficulty. The lower line traps the surplus oil, leaving the upper line free to draw the returning gas and the proper amount of oil.

When overhauling compressors or coils carbon tetrachloride will be found useful as a non-corrosive cleaning solvent. The carbon "tet" dries very quickly, and will keep the parts from gathering moisture while the unit is being re-assembled.

Overhaul jobs can be sold, and will help to pay the overhead of a service department. A special effort can be made to sell the overhaul service during periods when new installation work is scarce. Owners of commercial and apartment house equipment should be sold on the practice of having their machines thoroughly overhauled, and the systems checked, at least twice a year. An overhaul job should include renewal of belts when necessary, washing out and replacing of oil in compressor, checking of valves, replacing of gaskets, a thorough check for leaks, inspection of cooling coils, and a secondary inspection following adjustments. Such a service would go far to prevent faulty operation and insure the long life of the mechanisms.

In case objectionable odors develop in a refrigerator, through brine leakage or gas leakage, washing the box thoroughly with a solution of baking soda will sweeten the air. A box of charcoal is also effective in absorbing such odors.

Manual valves in commercial systems with syphon seals must be handled carefully or leaks are apt to develop in the fragile syphon bellows. Such valves were not designed to be twisted on and off every day. Customers should be cautioned to handle them with care.

SERVICE FIELD SEEKING MORE ALL-ROUND MEN

By L. C. Jones

ONE of the big problems that confront the mechanical refrigeration industry is the dearth of efficient all-round repair men in the service field. Manufacturers train their service men thoroughly to render service to their particular make of machine, so that there are thousands of mechanics who are proficient as specialists for each kind of machine. Only a few have training sufficient enough to service all makes of machines.

The field for service in the refrigeration field is expanding rapidly. Every day guarantees-to-users are expiring. Day by day machines are growing older and older. Here and there manufacturers and dealers go out of business and as a result many machines are orphaned.

The need for trained all-round service men is more evident every day. For instance, here is a good mechanic, reference, four years with the So & So Co. He is trained for a machine which uses sulphur dioxide, temperature control. Send that man out to a job on a machine which uses ethyl chloride and has low-side pressure control, production of which was discontinued three years ago, and with no service manuals available, your mechanic is stumped. He may try to find the leak with his ammonia "smelling bottle" or otherwise fumble the job. Being intelligent, he will learn in time, but meanwhile everybody suffers.

Out of seven applicants for one job in a repair shop only one man claimed to know the technique of every refrigerant. He had been employed in an experimental laboratory where tests of all kinds of machines were in progress, preparatory to bringing out a new one. His price was so high that no moderate sized repair shop could afford to hire him. He was almost in the engineer class.

The only remedy that suggests itself is broader training and education. This cannot and will not be obtained in specialized shops. It must come through the artisans' schools like Cooper Union in New York or Drexel Institute in Philadelphia.

Also private schools, such as the Utilities Engineering Institute in Chicago, which offers a home study course in mechanical refrigeration.

If the recently inaugurated course at the University of Pittsburgh is an artisans' course, it will fill the bill for that section of the country, but if it offers a university training with research and experiment, it does not supply the urgent deficiency.

A training school predicates text-books, and there are no text-books outside of the specialized service manuals. Here then, is a problem for the American Society of Refrigerating Engineers to solve, namely the preparation of a general all-round text-book for use in school

and shop. The book should contain all the tables, graphs, diagrams, charts that an intelligent workman or foreman can possibly call for, and all the information pertaining to every type of machine in use. It should be practical rather than scholarly, must not go too deeply into thermodynamics and chemistry, must be in plain every-day English and must explain theories without theorizing.

Perhaps the newly formed association of service men has already taken up this problem. It could well be included in their activities.

Such a general manual should not be credited to the authorship of any one man who has been associated with one organization. His opinions would be taken with reservations as representing his experience with that organization. On the other hand, if the book is sponsored by an association representing the whole industry it will bear the stamp of authority.

SERVICE MAN SUGGESTS HOOK-UP FOR SWITCHES

Jacksonville, Fla.—Refrigeration Service Co., aggressive electric refrigeration service merchants here, has found a way to save contacts on switches and at the same time eliminate interference in radio receivers caused by electric refrigerators. J. B. Venters has recently done a little experimenting along this line and he found that by placing a 1 to 4 microfarad condenser of 1,000 volt test A. C. across the contacts of the switch of the electric refrigerator, the arc caused when the switch is opened can be eliminated. The condenser will absorb the surge when the contact is broken. This set-up saves the contact and cuts down the interference in the radio.

The Refrigeration Service Co. was formerly Brand & Venters. Headquarters are maintained at 416 Basswood Street. All makes of refrigerating machines are serviced by this company and twenty-four hour service is offered.

Refrigerators

Tested • Both Ice and Mechanical

Refrigerators Tested for Performance in our Refrigerator Laboratory. This service is unique for the Manufacturer or Distributor.

We invite your inquiries.

George B. Bright Co.

Refrigerating Engineers and Architects
2615 12th Street, Detroit

Testing Service

for Domestic and Commercial Electrical Refrigeration

Testing and experimental laboratory service for Manufacturer, Distributor, Central Station. Test data exclusive property of client.

Electrical Testing Laboratories
Know by Test
80th St. & East End Ave.
NEW YORK

Precision Built

VALVE Needles
VALVE Seats
VALVE Mechanisms

Four years of satisfactory service to the industry

Buerk Tool Works
42 Pearl St. Buffalo, N. Y.



Sulphur Dioxide! For Direct Charging!

Every Container Analyzed

"Pure" Bone Dry Cylinders

2 to 150 lbs. Also Ton Drums—Tank Cars.

ANSUL Chemical Co. MARINETTE, WIS.



PENN Type B Room Thermostat

HERE is a highly accurate, dependable control especially designed for commercial refrigeration systems where a close differential in open air is necessary. It is extremely sensitive, responding to a temperature change of 2 degrees or more. A convenient adjusting lever is provided for raising or lowering the temperature when desired. There are no mercury tubes. Positive snap action. Easily and quickly installed. For all types of cold storage rooms, including fur vaults, butcher boxes, florist cabinets, etc.

PENN Type J Unit Control for Domestic Electric Refrigerators

1. One Dial Control
2. Temperature Selector
3. Thermal Overload Protector
4. Start and Stop for Defrosting
5. Range and Differential Adjuster
6. Simplicity—Low Installation Cost

Write for Standard Models

If you will thoroughly test these Penn Controls in your own laboratories, you will be convinced of their outstanding superiority. We will gladly furnish reliable manufacturers a model of either Penn Type B Room Thermostat or Type J Unit Control. Write today.

PENN ELECTRIC SWITCH CO.
DES MOINES, IOWA

With Offices in the Following Cities:
New York, Boston, Philadelphia, Cleveland, Cincinnati, Chicago, San Francisco, Los Angeles, Seattle, Lyons, France, London, England, Barcelona, Spain, Osaka, Japan.